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Levels of expertise in nurses working in surgical wards and intensive care units : a qualitative study.

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LEVELS OF EXPERTISE IN NURSES WORKING IN SURGICAL WARDS AND INTENSIVE CARE UNITS:

A QUALITATIVE STUDY

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ABSTRACT

The overall aim of this qualitative study was to identify levels of expertise in nurses involved in the field of surgical patient care. The research focused upon nurses undertaking a familiar event of practice in surgical wards and intensive care units within three hospitals. Sixty-one nurses were observed as they completed an initial post-operative assessment of patients who had undergone major surgery. They were subsequently interviewed and the data generated from these semi-structured reflexive accounts of practice were coded, categorised and interpreted following an inductive and naturalistic process of inquiry (Lincoln and Guba 1985).

A continuum of nursing expertise was identified which reflected four incremental levels in the nurses knowledge and skill. Several indicators of expertise emerged differentiating advanced beginners, competent, proficient and expert nurses. These indicators describe the movement in nursing practice from dependency to autonomy; learner to teacher; task focus to holism and rigidity to flexibility.

Four major factors were identified as powerful influences on the development of nursing expertise. Motivation provided the drive to pursue greater knowledge and skills in practice. Secondly, a comprehensive understanding and an ability to apply bio-physical and psycho-social knowledge appears vital. Thirdly, nurses require the ability to synthesise empirical knowledge with knowledge gained from experience. The fourth crucial factor involved learning from expert role models in practice. Conversely, longevity in clinical practice did not appear to be such an important influence on the development of expertise.

Intuition and reflection emerged as essential components within advanced nursing practice. These processes were found to be increasingly prominent within the nurses' clinical reasoning across the four levels of expertise. The implications of these findings were explored in the context of nursing practice, education, management and research.

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INTRODUCTION

Since the 1960s, the development of expert judgement, knowledge and skills in clinical practice has been examined and researched with varying degrees of success. As a result of these efforts, two very different avenues of research into the field of expertise have become established. The dominant view is embodied by psychological models of cognitive clinical reasoning which are based on human problem solving theory (Newell and Simon 1972). These highly rational and mechanistic models have coloured much of the western worlds' current understanding of the nature of expertise. However, in the 1980s an alternative and interpretive model of expertise (Dreyfus and Dreyfus 1980) emerged which rejected the prevailing reductionist understanding of the acquisition of skill. In subsequent years, the Dreyfus and Dreyfus model, adapted to nursing by Benner and colleagues (1984, 1996), has become highly influential within the nursing profession of Australasia, the United States of America, Canada and the United Kingdom.

Whilst these two very different views continue to sustain supportive groups amongst academics in general and nursing academics in particular, much still remains unknown about the development of expertise in nurses' day-to-day clinical practice. Further understanding of how knowledge is acquired and utilised in nursing care is essential if nurses are to be supported during development and retained as experts within the clinical field. Currently the profession is showing considerable interest in finding ways of identifying and evaluating the expanding roles of advanced practitioners, Clinical Nurse Specialists and Nurse Practitioners who are assumed to be experts within their fields. A sound research based understanding of the nature and development of expertise in clinical practice is clearly needed for these roles to be utilised effectively.

The early questions and ideas that generated the area of research interest in this study arose from the researcher's awareness of qualitative distinctions in nurses' levels of expertise whilst working in surgical wards. The researcher spent ten years involved in the provision of pre- and post-operative patient care within hospital settings. During that period, progress from raw beginner to Clinical Nurse Consultant prompted

observation and reflection on the intelligent action displayed in some nurses' clinical performance.

One particular event of practice, that of the arrival of the patient on the ward following major surgery, seemed most clearly to demonstrate the variation in nurses skills, knowledge and expertise. The overall aim of this study, therefore, was to explore and identify the levels of nurses' expertise using the clinical focus of post-operative assessment of patients returning from major surgery. The results of this exploration are presented in this thesis which comprises thirteen chapters as outlined below.

The first four chapters examine the literature which characterises current understanding of nursing expertise. Chapter One explores the changing paradigmatic view on the acquisition of the various forms of knowledge which are thought to underpin the development of nurses' clinical expertise. The five patterns of knowing which are currently recognised as underpinning nursing knowledge, namely, empirical, aesthetic, ethical, personal and socio-political knowledge are therefore described in this chapter (Carper 1978; White 1995).

Chapter Two traces the research studies which have drawn heavily from cognitive models and traditional post-positivistic methods to study potential differences between the clinical reasoning of novice and expert nurses. The limitations of this avenue of research in terms of understanding clinical nursing expertise are discussed.

Chapter Three addresses the phenomenological research literature into the nature of nursing expertise. These studies are largely qualitative, inductive in nature and focus upon the participants' understanding of the clinical judgement process to discriminate between nurses at different levels of expertise.

In Chapter Four, interpretive studies which explore the use of intuition in nurses' clinical judgement during practice are reviewed. Intuitive judgement has been held to be integral to expert nursing practice and is therefore examined as a potential key discriminator between novice and expert nurses (Benner 1984; Benner *et al*, 1996).

Chapter Five describes the qualitative research design which underpins the study. The researcher, acting as a non-participant, observed a clinical episode in which a post-operative assessment of a patient was made by each of the nurses in the study. This event was immediately followed by an interview based on the nurses' reflexive retrospective account of the episode. The interview data gathered from the sixty-one purposively sampled registered general nurses working in four specialty surgical wards and two Intensive Care Units, was transcribed and inductively analysed (Lincoln and Guba 1985). The findings from this data analysis are displayed across Chapters Six to Eleven, each of which provides elements of explanation of the nature of the nurses' expertise.

Chapters Six to Nine present the emergent influences and the four potential indicators which illuminate the nurses' development across a four-stage continuum of clinical expertise. Analysis of these indicators on an individual basis made it possible to identify each nurse's level of expertise. These results are then compared in a Postscript to Chapter Nine with the expertise levels identified earlier through the professional judgements of the three-nurse panel.

Chapter Ten displays the relationship between intuitive and analytical processes in nurses' clinical judgement at each of the four levels of expertise. Chapter Eleven completes the findings section with the presentation of seven case studies which demonstrate the complexities of the expertise jigsaw.

Chapter Twelve contains a discussion of the findings and consideration of the implications for clinical nursing practice and future research within the field. The discussion concludes with an exploration of the critical issues which must be considered to sustain the development and maintenance of expert nurses in practice.

Finally, Chapter Thirteen draws the study to a close with some concluding remarks on the nature of the findings and their contribution to the wider body of knowledge in the field.

CHAPTER ONE:
THE NATURE OF NURSING KNOWLEDGE AND ITS RELATIONSHIP TO STUDIES OF EXPERTISE

INTRODUCTION

This chapter provides a critical overview and sets the scene of the literature pertaining to the concept of nursing knowledge. Understanding the nature of nursing knowledge and its acquisition is deemed central to the study of clinical expertise in nursing practice. Indeed the importance of this relationship is illustrated by Benner, who argues,

> [expertise is] developed only when the clinician tests and refines theoretical and practical knowledge in actual clinical situations. Expertise develops through a process of comparing whole similar and dissimilar clinical situations with one another, so an expert has a deep background understanding of clinical situations based upon many past paradigm cases. Expertise is a hybrid of practical and theoretical knowledge. (Benner 1984: 294).

The nature of nursing knowledge has been under investigation for over thirty years. Fact-laden theoretical knowledge, gained through traditional post-positivist research, has prevailed since the 1960s (McCain,1965). However, since that time there has been a growing recognition of other forms of knowledge, illuminated through the use of alternative paradigms of research inquiry (Guba and Lincoln 1981).

This chapter explores Carper's (1978) four patterns of knowing (empirical, ethical, aesthetic and personal knowledge) which are recognised in advanced nursing practice. Additional patterns of knowing, including White's (1995) socio-political knowledge and Silva *et al.*'s (1995) two ontological concepts, namely the inexplicable and unknowable, are also explored. The development of patterns of knowing in nursing through reflection in and on practice is also examined.

Four paradigms of research inquiry (positivism, postpositivism, critical social theory and constructivism) are then explored (Guba and Lincoln 1994). These paradigms are synthesised into two main paradigmatic categories of research inquiry namely, postpositivist and interpretive studies according to their recognition of different forms of knowledge. In the final pages of this chapter,

these categories are used to generate a framework to consider studies which inform the understanding of nursing expertise.

CARPER'S (1978) PATTERNS OF KNOWING IN NURSING

Carper's (1978) seminal doctoral study was the first complete investigation of the kinds of knowledge utilised in nursing. Her findings demonstrated that nursing knowledge had patterns and structures which exemplified ways of thinking about phenomena in clinical practice. Dewey (1933) and Polanyi (1958) figured prominently in Carper's exploration of nursing knowledge; the contribution of these authors to current understanding of the field will be considered later. First the four fundamental patterns of knowing identified in Carper's original framework, empirics or the science of nursing, ethics or moral knowledge, aesthetics or the art of nursing and personal knowledge are discussed in detail. In addition, Jacobs-Kramer and Chinn's (1988) framework which identifies the creative, expressive and assessment dimensions of these forms of knowledge is represented. The important recent recognition of socio-political knowledge as a fifth form of knowing by White (1995) is also explored. Ontological questions raised by Silva *et al.* (1995) which relate to Carper's patterns of knowing and ways of being are also considered. These essential elements of nursing knowledge which are detailed in the following section are summarised in Table 1 (p.19).

EMPIRICS OR 'THE SCIENCE OF NURSING'

Carper defined 'empirics or the science of nursing as a pattern of knowledge which is systematically organised into general laws and theories' important to the discipline of nursing (Carper 1978: 14). Jacobs-Kramer and Chinn argue that for the product of empirical knowledge to be of use, nurses must be involved in a creative dimension which incorporates the processes of 'describing, explaining and predicting' which extends and modifies the knowledge for practice (Jacobs-Kramer and Chinn 1988: 291). They add an expressive dimension which incorporates the identification of empirical knowledge as 'facts, theories, models and descriptions that impart understanding' in nursing (Jacobs-Kramer and Chinn 1988: 292).

Furthermore, Jacobs-Kramer and Chinn include an assessment dimension which illustrates how nurses can question how empirical knowledge is credible within a field. They describe 'replication' as the way in which empirical knowledge 'is assessed for credibility in the process and context'

(Jacobs-Kramer and Chinn 1988: 292). This requires it to be repeatable in similar contexts of practice and reliability and 'validity are seen as the index for credibility' in this form of knowledge (Jacobs-Kramer and Chinn 1988: 292). In addition Silva *et al.* (1995) suggest that nurses need to ponder ontological questions of how they find meaning in what they know. They contend that only then can nurses come to understand the relationships between empirical forms of knowledge and the world around them. These dimensions of empirical knowledge are included in the first column of Table 1.

ETHICAL OR MORAL KNOWLEDGE

Ethical, or moral knowledge is the moral code which guides the ethical conduct of nurses. This pattern of knowing is 'based on the primary principle of obligation embodied in the concepts of service to people and respect for human life' (Carper 1978: 20). Ethical awareness is gained through nurses' contemplation of the issues involved within moral choices, and from being held responsible for the choices made in practice. Jacobs-Kramer and Chinn (1988) note the creative dimension of ethical knowledge involves nursing in holding values of what is right, clarifying these values as they become visible and advocating these values for themselves and for others. These authors suggest the expressive dimension of ethical knowledge involves codes and standards of professional conduct (UKCC 1996) and social norms, theories of ethics and ethical decision making.

Jacobs-Kramer and Chinn argue that the assessment dimension of ethical knowledge involves the critical issues of 'justness, rightness and responsibleness' which require a discourse on contextual circumstances and exploration of the decision-making processes through reflection (Jacobs-Kramer and Chinn 1988: 293). Through these processes new understanding may emerge relating to the 'justness' of the outcome for the patient and the nurses' values which inform the nurses' ethical knowledge for future practice. Additionally, Silva *et al.* (1995) describe the ontological considerations of conscience and moral virtue embedded within the nurses' decision-making. They draw attention to the emotional anguish and potential loss of integrity that can eventuate if nurses are thrown into a moral conflict by the choices available to them. These dimensions of ethical knowledge are included in the second column of Table 1 (p 20).

Table (1): SUMMARY OF ESSENTIAL COMPONENTS OF NURSING KNOWLEDGE

DIMENSION	EMPIRICS	ETHICS	AESTHETICS	PERSONAL	SOCIO-POLITICAL	INEXPLICABLE/ UNKNOWABLE
CREATIVE	Describing Explaining Predicting	Nurses hold values of what is right, clarifying these values as they become visible and advocating these for themselves and for others	Engagement, interpreting and envisioning of the whole using previous knowledge of patients care incorporating all other patterns	Exploration of self through different modes of reflection	Elucidating potentially varying constructions of reality between individuals.	
EXPRESS-IVE	Facts theories and models; Descriptions that impart understanding in nursing	Codes and standards of professional conduct, social norms, theories of ethics and ethical decision making	The act of artful nursing practice	Exression of the authentic (private) and disclosed (public) self	Critiquing the status quo; transforming to enable equal voice in care service and provision	
ASSESS-MENT: CRITICAL QUESTION	how nurses question what empirical knowledge represents and how it may be representative of a field	Critical issues of rightness and justness	Gaining an understanding of the meaning behind the nursing act	Having knowledge of what is being done in practice and doing what one knows is important to practice	Identification of those heard and those muted	
PROCESS-CONTEXT	Replication and repeatability across similar nursing contexts	Discourse involving exploration of the decision making processes through reflection	Criticism involving empathy for what those involved are trying to make known	Reflection informed by the response of others and our reflection on our response to the life-world of other	Listening to the voices of all involved	
CREDIBIL-ITY	Validity and Reliability	The justness of the outcome for the patient; the nurses values; enriching knowledge for future practice	Consensual understanding of the act gained by deep questioning and contemp-lation of interested parties	Congruity between authentic and disclosed self, characterised by authenticity, genuineness and inner strength	Shared control and movement toward a more equitable distribution of care	
ONTOLOG-ICAL ISSUES	Finding meaning in what is known before trying to understand empirical relationships within the world	Issues of conscience and moral virtue. Potential emotional anguish and loss of integrity through moral conflict over available choices.	Perceptual understanding of multiple realities gained through the senses giving meaning to experiences	Growing to understand one's self		>Inexplicable experiences go beyond a persons ability to directly understand or describe and yet cause vibrant awareness >The unknowable lies completely outside the thoughts and perceptions and yet still affects the person

AESTHETICS OR THE ART OF NURSING

Aesthetics or the art of nursing is described as a pattern of knowledge which is made visible through the action taken to provide whatever the patient requires to restore or extend his ability to cope with his situation. The perception of the need expressed by the patient is reflected in the nurses' empathetic responses (Carper 1978). Perception is thought to reach beyond simple recognition to include the active collection of diffuse minutiae into an experienced whole (Dewey 1925). Jacobs-Kramer and Chinn argue that this form of knowledge is gained through the creative dimension of 'engagement, interpreting and envisioning of the whole' (Jacobs-Kramer and Chinn 1988: 295). The process of engagement and interpretation by the nurse incorporates previous understanding of patient care and draws on all other forms of knowing. It is best expressed as an act of artful nursing practice which can be described and whose features may be written about but whose nature is essentially mysterious.

Jacobs-Kramer and Chinn argue that the assessment dimension of aesthetic knowing involves gaining an understanding of the meaning behind the nursing act. They assert that criticism, as the mode of assessment for the process context, requires 'empathy and an intent to fully appreciate what the actors meant to convey' (Jacobs-Kramer and Chinn 1988: 295). These authors claim that credibility is assessed through consensus of understanding of the act gained by deep questioning and contemplation of the interested parties. White (1995) offers further insight into how this form of knowledge is bound to the context of the experiences as they happen in practice merging and changing that which is previously known. Silva *et al.* (1995) describe the strong ontological relationship between aesthetic knowledge and the important perceptual understanding of multiple realities gained through the senses. These sensibilities reach beyond the empirical world and give meaning to nurses' day-to-day experiences. The elements of aesthetic knowledge are summarised in the third column of Table (1).

PERSONAL KNOWLEDGE

Carper's (1978) fourth pattern of knowing, personal knowledge, is concerned with the kind of knowing that promotes wholeness and integrity in personal encounters with others. Individuals are engaged, rather than detached, within a reciprocal relationship. Polanyi (1958) considers the commitment involved in personal knowledge as the 'passionate participation' in the act of knowing.

A person who is motivated to learn, when faced with a situation outside of her current understanding, will seek to deepen her knowledge. New understanding will grow from interaction with others, the contextual environment, active comprehension, rational intuition, appraisal and personal judgement. During this process limited understanding alters, and personal and objective perceptions fuse to give a new level of confidence and insight. Polanyi describes rational intuition as an important component of this process in the following way:

> It is intuition that senses the presence of hidden resources for solving a problem and which launches the imagination in its pursuit. And it is intuition that forms there our surmises and which eventually selects from the material mobilised by the imagination the relevant pieces of evidence and integrates them into the solution of the problem.
> (Polanyi 1958: 42)

Intuition as a 'gut feeling' or form of instinctive knowledge is viewed as an unexplainable extrinsic factor to logical thought processes which confuses theorists who seek to find concrete analytical steps to all forms of thought. Many authors believe in the importance of intuition and support the mathematician Poincare's (1969) stance that logic is used to prove what intuition discovers. It is Polanyi's work on personal knowledge that guides the thinking behind recent research which seeks to consider the tacit or intuitive components of personal knowledge and judgement in nursing (Benner 1984; Benner *et al.* 1996; Sweeney 1994; Silva *et al.* 1995).

Jacobs- Kramer and Chinn claim the creative dimension of personal knowing can be understood as an exploration of self through different modes of reflection and is 'expressed through the authentic [private] and disclosed [public] self' (Jacobs-Kramer and Chinn 1988: 294). These authors contend the assessment dimension requires the nurse to focus their reflections on thoughts, feelings and perceptions revealing the congruity between their inner feelings and outer exposed self. Personal growth of this nature is felt to be characterised by 'genuineness and authenticity' (Jacobs-Kramer and Chinn 1988: 294) within therapeutic relationships (Schultz and Meleis 1988; Moch 1990; Smith 1992; White 1995). Silva *et al.* describe the importance of growing to 'understand one's self and ways of being' through the use of shared narrative. Through the sharing of stories nurses come to understand the varied aspects of personal understanding and 'the existence of multiple realities'

within practice (Silva *et al.* 1995: 8). The elements of personal knowledge are summarised in the fourth column of Table (1).

NEW ADDITIONS TO CARPER'S PATTERNS OF KNOWING IN NURSING

White (1995) points out the absence from Carper's (1978) four patterns of knowing of an important, all-encompassing form of knowing, which she describes as socio-political.

SOCIO-POLITICAL KNOWLEDGE

White conceptualises this form of knowing within the socio-political context of the nurse and patient as individuals and the socio-political context of nursing as a practice discipline within society. The former concerns the cultural identity of each individual and their understanding of health and disease, language, identity and connection to the environment. The latter incorporates society's understanding of the nursing profession and nursing's understanding of society. White uses Jacobs-Kramer and Chinn's (1988) creative, expressive and assessment dimensions to frame this form of knowing. This author suggests that the creative dimension involves classifying potentially opposed constructions of reality between individuals. Furthermore, this is expressed by critiquing the status quo and finding ways to transform the situation, to enable all involved to have an equal voice in care service and provision. Assessment requires the identification of those individuals who are being heard and those who are muted to allow for all involved to be given a voice. Credibility is gained through shared control and progression towards a more equitable distribution of care. Each of these elements of socio-political knowledge is summarised in the fifth column of Table (1).

INEXPLICABLE AND UNKNOWABLE

Smith (1992) views Carper's (1978) approach as an artificial separation of patterns from the 'wholeness' of knowing in practice. Silva *et al.* (1995) agree with Smith and suggest that Carper create's an unintentional illusion of mutual exclusion by presenting each pattern as a discrete entity and not emphasising their interaction with one another. These authors hold there is a need for the addition of two further ontological concepts, the inexplicable and the unknowable, to Carper's patterns of knowing. They claim that the knowable and yet inexplicable may have a meaning that is far more significant

than the meaning of any explainable experience because of self awareness and the uniqueness of the perception. Silva *et al.* contend that the inexplicable 'experiences goes beyond our ability to directly understand or describe it, yet it is so vivid and powerful that one cannot help but know it' (Silva *et al.* 1995: 10). The difficulty in sharing the inexplicable experience with others, these authors assert, make it one's own. The 'unknowable lies completely outside of unconscious thoughts and perceptions' and yet still affects the person (Silva *et al.* 1995: 11). Therefore Silva *et al.*'s merging of epistemological and ontological considerations requires researchers to ask questions about being and knowing simultaneously. The essential elements of these forms of nursing knowledge are summarised in the sixth column of Table (1).

In summary, the work of Carper, Jacobs-Kramer and Chinn, White and Silva *et al.* provides a good introduction to the epistemological and ontological issues which underpin consideration of forms of nursing knowledge in practice. A sound grasp of the interplay between these forms of knowledge is essential to understand the development of expert knowledge, skills and judgement.

THE DEVELOPMENT OF KNOWING IN NURSING THROUGH REFLECTION IN AND ON PRACTICE

Dewey (1925) suggests that people use a form of reflective thought to gain knowing from their experiences and make judgements when faced with a problem. He claims that reflective thinking involves an initial state of uncertainty followed by investigation to find information that will eliminate the indecision. Dewey contends this form of reflection, which considers the consequences of alternative approaches and response pathways, provides the knowledge required for intelligent action in practice. Polanyi also rejects the idea of scientific detachment in the attainment of knowing. He differentiates between 'knowing that', - i.e. knowledge gained from accumulation of facts and theories - and 'knowing how', which is knowledge gained from previous experience. Acquisition of the latter however is poorly understood, as it is not always possible to explain the development of 'knowing how'.

Schön (1983) offers further thoughts on the importance of reflection on experience in the development of knowledge in skilled practice. He describes the prevailing idea of rigorous professional scientific knowledge to be that of 'technical rationality'. Schön's view of technical rationality rests on an

objective ontological view: the truth of beliefs is held to be testable by reference to established facts. Thus this form of professional 'scientific' knowledge rests upon the philosophical assumption that problems should be solvable, at least in principle, by reference to facts regardless of the context. According to this model, rigorous professional practitioners will solve clearly delineated problems by applying theory and techniques which are derived from systematic and scientific knowledge.

Schön (1983) also describes another form of knowledge which is used when dealing with unclear and complex situations of uncertainty, uniqueness and value conflict. Schön coins the term 'professional artistry' to refer to the skilful and non-technical judgements that individuals make in these situations. Schön's view like that of Dewey (1929) and Polanyi (1958), supports Benner and Wrubel's (1982) argument that artistic forms of judgement are not dependent upon conscious thought or description of what is known how to do. Schön describes this form of judgement as 'knowing-in-action' in which the intelligent action is publicly observable but not always easy to describe. However, the practitioner, by observing and reflecting on her actions, can construct a description of the tacit knowing-in-action within her practice.

Schön (1983) contends that a practitioner's 'reflection-in-action' is rooted in a world of her own perceptions and beliefs that she has come to accept as reality. This author describes a form of 'reflection-in-action' which occurs in the middle of a practitioner's activity without interrupting it and serves to reshape what she is doing while she is doing it. Further, Schön asserts that even when a practitioner makes conscious use of research-based theories and techniques, she is dependent on tacit recognition, judgements and skilful performance. A further step, 'reflection-on-action', is also employed when practitioners abandon their learnt skills when they meet occasions which produce an unexpected result or surprise. Just as Dewey stated previously, Schön (1991) describes how a person stimulated by surprise can either ignore, forget, or choose to reflect upon the experience.

Like Schön, Benner and Wrubel (1982) offer thoughts on the development of the reflective practitioner and try to find ways of valuing the perceptual awareness so apparent in knowledge embedded in nursing practice. Their focus helped to draw the attention of the nursing world to the nature of skilled clinical knowledge and the relevance of experience to its acquisition. Benner

and Wrubel recognise that objective and reliable measurement is preferred in a world dominated by a tradition of science which places importance upon theoretical knowledge over knowledge gained through practice. However, they, like Schön, note that clinical knowledge and skilled clinical judgement are not reducible to this type of measurement. Polanyi (1962) calls these individuals, who possess skills that are irreducible to objective measurement strategies, 'connoisseurs'. Benner and Wrubel describe the skills of the 'connoisseur' as those which lie within the realm of expert human judgement because:

> perceptual and holistic qualitative judgements rather than objective measurable judgements are involved...[in] perceptual assessments that expert clinicians make based on the senses of touch, smell and sight and on the interpretation of a patient's physical, verbal and behavioural expressions...The expert puts them together...perception that something is wrong often begins with a feeling
> (Benner and Wrubel 1982: 12)

These authors note that the perceptual aspect of skilled nursing knowledge does not require the clinician to make a conscious effort to reflect in order to identify the relevant elements of the situation. However, Benner and Wrubel suggest conscious reflection can become necessary if the next step toward a solution is not obvious from the current situation's similarity to others. They consider it likely that clinicians will then reflect upon past experience in attempting to reach a decision for action. These conclusions confirm Carper's description of the integral role of reflection on knowing gained from previous practice and not purely through the learning of context-free facts.

Furthermore Benner and Wrubel also argue that experience is the crucial element in the development of expert clinical knowing. They contend experience is:

> not the mere passage of time or longevity. Rather it is the transformation of preconceived notions and expectations by means of encounters with actual practical situations...It is a transformation or refinement of preconceived notions or theory...Clinical situations that...do not require nurses to consider both what they expected and what they found do not qualify as experience
> (Benner and Wrubel 1982: 11)

SUMMARY OF THE DEVELOPMENT OF PATTERNS OF KNOWING IN NURSING

In summary, the nature of nursing knowledge has been explored by a number of authors and has been found to include empirical, ethical, aesthetic, personal knowledge, socio-political knowledge and the ontological concepts referring to the inexplicable and unknowable (Carper 1978; Jacobs-Kramer and Chinn 1988; White 1995; Silva *et al.* 1995). These forms of knowing, with the exception of empirical knowledge, are believed to be developed through reflection on experience which leads to changes in nurses' practice (Benner and Wrubel 1982). Nurses develop the ability to understand a patient's situation as a whole through the synthesis of theory and knowledge gained from experiences with others. It is argued that, through a variety of experiences, new understanding merges and alters previous knowledge of similar context-bound situations, providing nurses with new pattern recognition. Therefore nurses' perceptions, feelings and intuition emerge as instrumental in the thinking processes which guide practice. Nursing knowledge also appears to involve commitment and engagement in relationships with patients and others and the recognition of the existence of multiple realities in practice (Benner and Wrubel 1982; Smith 1992; Sweeney 1994; Silva *et al.* 1995; White 1995).

PARADIGMS OF RESEARCH INQUIRY WHICH RECOGNISE MULTIPLE FORMS OF KNOWING IN THE DEVELOPMENT OF NURSING EXPERTISE

Knowing which is unconscious and intuitive is not recognised by the positivist tradition of research inquiry. This has led researchers who recognise multiple forms of knowing in nursing to seek other paradigms of research inquiry. Paradigms are recognised as a discipline's method(s) of structuring reality (Kuhn 1962). Kuhn maintains that a paradigm exists when a body of accepted theory shares two essential characteristics. First is that the achievements are sufficiently unprecedented so as to attract an enduring group of adherents away from competing modes of scientific activity: and second, that it is sufficiently open-ended to leave multiple problems for the redefined group of practitioners to resolve.

Guba and Lincoln (1994) confirm the movement of research groups away from the once all-encompassing positivist 'scientific' paradigm within western

culture to recognise four paradigms of inquiry. These four paradigms are referred to as positivism, post-positivism, critical theory and constructivism. They are characterised according to three questions, which address the philosophical underpinnings of the approach to research inquiry. The first question considers the ontological basis of the paradigms and asks, 'What is the nature of reality or the knowable?' The second question examines the epistemological focus of the paradigms and asks, 'What is the nature of the relationship between the inquirer and the knowable?' The third question examines the methodology and asks, 'How can the inquirer go about finding out what he or she believes can be the known?' (Guba and Lincoln 1994: 108). These questions offer a framework for consideration of the four paradigms which are described below and summarised in Table (2) (p.29).

POSITIVISM

Guba and Lincoln describe positivism as the dominant paradigm of western thinking, characterised by its ultimate aim to find the true nature of reality and thus be able to predict and control natural phenomena. The ontological basis of this paradigm is realism, in which there is a belief that a true reality exists, driven by laws which are constant and which can be understood within a causal relationship. Knowledge based on these laws can be summarised as generalisations which are held to be time- and context-free. The epistemology of positivism combines Cartesian dualism with objectivity, and holds that the inquirer must adopt a distant non-interactive position within the study. The researcher's values and other potentially biasing factors are believed to be excluded from influencing the outcomes by the utilisation of this approach. The methodological focus of this paradigm is to closely approximate the experimental 'scientific' method. All research is required to obey the rules of control, random allocation and manipulation of context free variables to obtain the true facts.

Guba and Lincoln contend that positivistic approaches are dependent upon the development of causal relationships, in the form of questions or hypotheses, which arise from existing theories, and the utilisation of the deductive research process and observation of phenomena stripped of context. Rigour is sought through decontextualisation, though consequently relevance is lost, as simulated situations of the studies are not held to be generalisable to natural settings. Many researchers and theorists continue to maintain this world view, and to value only theoretical knowledge which has been gained through the

TABLE (2)
SUMMARY OF THE TWO PARADIGMATIC CATEGORIES UNDERPINNING RESEARCH INQUIRY INTO THE DEVELOPMENT OF NURSING EXPERTISE (adapted from Guba and Lincoln, 1994)

CATEGORIES	PARADIGMS	ONTOLOGICAL FOCUS	EPISTEMOLOGICAL FOCUS	METHODOLOGICAL FOCUS
POSITIVISTIC AND POSTPOSITIVISTIC STUDIES OF NOVICE AND EXPERT **NURSES CLINICAL REASONING**	**POSITIVISM**	**REALIST** -true reality exists -governed by natural laws and mechanisms -cause/effect relationship -time/contest free generalisations	**OBJECTIVIST** -objectivity: non-involved position -value/bias free of influencing outcomes	**EXPERIMENTAL** -questions/hypotheses stated as propositions -subjected to empirical testing -under carefully controlled conditions
	POST-POSITIVISM	**CRITICAL REALIST** -true reality exists but cannot be fully apprehended. -governed by natural laws only partially understood	**MODIFIED OBJECTIVIST** -objectivity the ideal but approximated only -as neutral as possible -use of external monitoring factors	**MODIFIED EXPERIMENTAL** -modification to include: -triangulation, -use of natural settings, -theory generating as well as theory verification studies
INTERPRETIVE STUDIES OF NURSES JUDGEMENT AT DIFFERENT LEVELS OF EXPERTISE	**CRITICAL THEORY**	**CRITICAL REALIST** -true reality exists but can never be fully understood -governed by natural laws that are only partially comprehended	**SUBJECTIVIST** -values and theory cannot be separated -the values of the researcher are made known in the inquiry	**DIALOGUE/ TRANSFORMATIVE** -understand and make explicit shared meanings -facilitate emancipation of the oppressed with full knowledge
	CONSTRUCTIVISM	**RELATIVIST** -multiple mental constructions of reality	**SUBJECTIVIST** -findings are the creation of the process between researcher and participants	**HERMENEUTIC/ DIALECTIC** -individual constructions are compared and contrasted with the aim of reaching a consensus

scientific experimental method. Thus for some, nursing knowledge can only be 'empirical' which is investigated, legitimised and valued according to the rules of the positivistic paradigm of inquiry. The positivist paradigm is summarised in the first row of Table (2).

POSTPOSITIVISM

Postpositivism is described by Guba and Lincoln (1994) as a modified version of the positivist paradigm in which prediction and control of natural phenomena remain the central aim. The ontological basis of this paradigm is that of critical realism in which a true reality is still believed to exist, driven by natural laws which can only ever be partially understood. The epistemology of postpositivism is one of modified objectivity in which objectivity remains the ideal, but can only be approximated by the researcher through traditionally recognised methods of control. The researcher strives to be as neutral as possible, to declare any predisposition held and to be open to examination by the discipline and peers. The methodology of postpositivism is therefore the modified experimental method which remains manipulative but places greater emphasis upon a form of triangulation.

These authors argue the premise of this methodology is that complete objectivity cannot be reached and thus a less flawed result will occur using data gathered through various sources within more natural settings. Guba and Lincoln contend that quantitative methods are used and postpositivists combine these with qualitative methods consistent with ethnography or case study. Thus, they argue, the choice between qualitative and quantitative methods becomes a methodological choice and does not in itself reflect a paradigm shift. It follows, then, that studies which mix methods remain within the post-positivist domain of inquiry. The desire for prediction and control requires great emphasis to be placed on the use of formal theories, and much research is done to develop and test these theories. The main points differentiating the postpositivism paradigm are summarised in the second row of Table (2).

CRITICAL SOCIAL THEORY

The paradigm of critical social theory involves ideological approaches to inquiry such as neo-Marxism, feminism and critical theory (Guba and Lincoln 1994). These movements are grouped together on the grounds of their rejection of the positivists' claim of freedom from value bias within research.

Supporters of this paradigm believe that research inquiry reflects the values of their human constructors. Therefore the influencing values of those involved must be made overt within each inquiry.

Guba and Lincoln argue the ontological basis of the paradigm rests on a belief in a 'true consciousness' that is reachable through objective inquiry. Critical realists seek to raise people from a position of false consciousness to recognise oppressive elements in their lives so they can become emancipated and transform their world. The epistemological basis of this realm of inquiry is subjective in which the researcher's values moderate the inquiry. Guba and Lincoln claim the methodological focus of the researcher is the use of dialogue to 'energise and facilitate transformation of the participants from a state of 'false' consciousness to a common point of view resting on 'true' consciousness' (Guba and Lincoln 1994: 110). The ontological, epistemological and methodological differences found in critical social theory are summarised in the third row of Table (2).

CONSTRUCTIVISM

Guba and Lincoln describe constructivism as a paradigm which involves the fusion of ontology and epistemology. Ontology within the constructivist paradigm is relativist, and realities are understood to exist in the form of multiple mental constructions. These constructions are socially and experientially based, local and specific, dependent for their form and content on the persons who hold them (Guba and Lincoln 1994: 111). These authors argue that epistemology of constructivism is subjective in which the process of interaction between the researcher and the participant create the findings. The constructivist methodology involves the interpretation of the meaning of the individual's construction and the investigation of the truth of these constructions. Individuals' constructions are elicited, refined, compared and contrasted with the aim of generating a few constructions on which there is substantial consensus. The tenets of the constructivist paradigm are summarised in the fourth row of Table (2).

SUMMARY OF THE TWO PARADIGMATIC CATEGORIES UNDERPINNING RESEARCH INQUIRY INTO THE DEVELOPMENT OF NURSING EXPERTISE

Guba and Lincoln's (1994) four paradigms of research inquiry discussed in the previous section offer a useful framework for the examination of studies

which investigate the development of clinical expertise in nursing. The four can be placed into two alternative categories namely, postpositivist and interpretive studies. Guba and Lincoln's first and second paradigms of positivism and postpositivism can be viewed as that of one major paradigmatic category as they share a common ontological view that truths exist, driven by natural laws which can be at least partially understood.

Positivism and postpositivism also share the epistemological belief in the possibility of objectivity requiring researchers to retain the 'etic' perspective and maintain distance from the phenomena under study. They endeavour to use contest-free theoretical models to explain these phenomena. Further these paradigms share a methodological base which holds the experiment as the 'gold standard' of achievement and utilise predominantly quantitative methods to investigate phenomena. As a result, studies which can be grouped into this category utilise theoretical models and quantitative methods to frame and explain the findings of a phenomena under study. This first paradigmatic category is summarised across the first two rows of Table (2).

This category therefore includes postpositivistic studies of nurses' clinical reasoning at different levels of expertise. Research of this nature obeys the traditional 'scientific' methods in which theoretical frameworks (cognitive models) are used to 'map' the cognitive processes at work in the minds of the practitioners. These studies are usually conducted in controlled settings such as the laboratory or classroom. More recent studies in this category have endeavoured either to simulate scenarios found in real practice, or to use verbal protocols in the clinical setting to map the thought processes of the practitioners. Studies which fall into this category are reviewed in Chapter 2.

The second paradigmatic category can be produced by grouping together the interpretive paradigms of critical social theory and constructivism. Whilst these paradigms vary in their ontological views they do share the epistemological belief that an understanding of phenomena can be gained by reaching a consensus of the participants' opinion or 'emic' perspective. Therefore studies which can be grouped into this category use qualitative methods which openly encourage the participants to use their own understanding to describe the phenomena.

The second category therefore includes interpretive studies of judgement between nursing at different levels of expertise. Studies using interpretive approaches seek to understand the knowledge which guides practitioners in the real world. These researchers use inductive processes to construct an understanding of the practitioner's world and the participants are purposively chosen because of their interest or involvement in the phenomena under study. The knowledge which guides the practitioners is investigated from the basis of the participants' understanding, not the researchers. There is no control or manipulation of the setting and no restraint is made on the nurses' description of the knowledge used to guide their practice. Instead, all forms of knowledge are considered, as the practitioners describe the thoughts and feelings which guide judgements and actions within their practice. Studies in this category of research are reviewed in Chapters 3 and 4.

CHAPTER TWO:
UNDERSTANDING EXPERTISE: AN OVERVIEW OF POSITIVIST AND POSTPOSITIVISTIC STUDIES OF NOVICE AND EXPERT NURSES' CLINICAL REASONING

INTRODUCTION

This literature review addresses research which uses clinical reasoning frameworks to investigate potential differences between nurses at different levels of expertise. Cognitive models and theories are applied, and traditional quantitative methods, common to positivist and post-positivist paradigms of research inquiry, are utilised within these studies. Two cognitive models of clinical reasoning, decision-analysis and information-processing theory have been particularly influential in the study of novice and expert nurses' clinical reasoning, and these are outlined in brief. The findings from this body of research are then described in detail. In addition, brief analyses of the concept of expertise and expert practice based on this body of literature are included. Brief reviews of studies of novice and expert clinical reasoning from the psychology literature offer further insights into this field. Differences found between novice and expert nurses' clinical reasoning are summarised. In particular the roles of intuition and experience within skilful decision-making is noted. The methodological limitations of these studies in terms of the understanding of nursing expertise in the context of practice are also highlighted.

STUDIES BASED UPON DECISION-ANALYSIS THEORY

Decision-analysis theory is an early cognitive model which researchers attempted to apply to studies of nurses' clinical reasoning. Correlational statistical models such as Bayes' theorem (Elstein and Bordage 1979) provide a mathematical basis on which to compute the probability of a patient with an observable set of signs and symptoms having a particular disease. The process employs a 'decision search tree,' which contains an estimate of the probability of each of the possible diseases suggested by the clinical symptoms of the patient. The clinician threads her way systematically through the 'tree' by asking questions to determine if indicators of one of the possible diagnoses is present. The clinician then moves on to exclude all possible diagnoses. During this process the set of probabilities of the diagnoses is constantly altering so that eventually the probability of one diagnosis approaches unity and the diagnosis is reached (Elstein and Bordage 1979; Aspinall 1979).

Bayesean theorists believe that it is possible to gain a complete data base for the selection tree from the knowledge and judgement articulated by expert clinicians. It is their aim to gather this knowledge base into an organised form of expertise which can be distributed to improve the diagnostic strategies of the average clinician. The underlying belief of this approach is that it is possible for an expert to articulate all that she knows and how she reaches her final judgement. This assumption has led to the development of computer-assisted systems in medicine. These systems utilise statistical algorithms to estimate the most likely diagnosis from an analysis of disease symptom frequencies and disease probabilities. This theoretical model is now known as decision-analysis and provides a framework for a number of studies of nurses clinical reasoning which are heavily influential in later investigations of nurses at varying levels of expertise.

In one of the earliest studies of nurses' decision-making, Hammond *et al* (1967) investigated how nurses revised their judgements of the 'state-of-the-patient (SOP)' as they were given new information about the patient. The nurses were asked to complete twelve cognitive tasks using written simulated patient case studies. The method of analysis involved a comparison of the nurse's step-by-step revision of judgement as new information was received with the revisions made by a rational model which incorporated a mathematical formula of probabilities (Bayes' theorem). Hammond *et al* claim that the nurses intuitively manipulated these probabilities in a rational manner, and yet their revisions differed substantially from those made using the mathematical model.

The lack of an elegant match between the mathematical probability model and the nurses' decision-making processes, therefore, is a clear weakness in the applicability of this theoretical framework. A further limitation of the study involved the use of simulated case studies under restrictive experimental conditions. The artificiality of simulation causes doubt to be thrown on the generalisability of these findings to nurses' decision-making in the real world. This early introduction to the use of simulated case studies left a lasting impression of the limited relevance of findings from similar studies on nurses' clinical reasoning within actual clinical practice.

In 1976 Grier conducted a study to investigate the process of nurses' decision-making to determine the level of agreement between intuitive decisions and

decisions made using decision-analysis theory. Fifty visiting and hospital-based nurses from one metropolitan area were asked to rank actions, give probabilities of occurrence of potential outcomes, and assign values to these outcomes in four written patient case studies. Hypotheses were utilised to test for each of the nursing decisions related to the four patients scenarios. The first ranked action the nurses made was considered the intuitive or judgmental decision.

The nursing decisions were analysed by determining agreement between the highest expected value, the first-ranked action, the ordering of expected values and the ranking of actions. Grier asserts that these nurses intuitively chose nursing actions that had the highest expected values for 109 of the 185 decisions. The actions ranked first by the nurses were consistent with the values and probabilities which they assigned to the outcomes in 58.9 per cent of the decisions. She claims this percentage indicates that a systematic and objective process is used by the nurses to make most of the decisions, resulting in a justifiable choice of action for achieving the desired goal.

Grier concludes that nurses tend to reach decisions by means of a rational rather than intuitive method. Furthermore, she argues that enough of the nurses' decisions fit this model of decision-making and therefore provide evidence that decision-analysis theory is applicable. This conclusion is arguable with close to half of the nurses' decisions failing to match the model. These findings may also lack generalisability as they rest solely on the nurses' application of probability to decision-making within a simulated setting. This study is also limited by the lack of investigation into the role of intuition even though Grier assumes its use in nursing decision-making.

Aspinall (1976) carried out a study to determine the ability of 187 hospital nurses to identify possible causes of alterations in a patient's condition. These nurses were asked to identify all possible problems that could have caused the alteration in the cognitive function of a patient described in a written case study. She claims that most of the nurses could not identify all of the potential causes of the change in the patient. Aspinall asserts that the nurses did not demonstrate strategies that would assist them to evaluate cues without bias, and then to focus on the possible causes of the deterioration in the patient.

Aspinall (1979) followed her 1976 study with research using the Bayesean theorem to determine if the use of 'decision search trees' would improve the nurses' diagnostic accuracy. Ninety nurses were divided into three groups and matched for educational background, years of experience, and performance in a previous study in which the nurses identified patients problems. Aspinall claims that statistical analysis of the groups' results show significant improvement in accuracy amongst the experimental group which used decision trees. Aspinall argues that nurses can be taught to use decision trees through simulated case scenarios. However, their usefulness to the nurses in practice remains unclear, especially in light of Aspinall's assertions that some nurses experienced difficulty in trying to use the decision trees. This finding suggests the study may be flawed by the researcher's attempt to force nurses to think in a manner which is foreign to their usual practice.

In 1985 Corcoran provided a detailed examination of the research which considers decision-analysis theory as a potential guide for making clinical decisions in nursing. Decision-analysis assumes that 'subjective probabilities' can be used to predict outcomes. The values assigned to those outcomes can be introduced into the formal decision-making pathway of a problem. Laws of probability are applied on the basis of the person's experience or on data available in published literature. Decision-analysis also assumes that individuals are rational decision-makers and will choose the alternative with the best 'probability' outcome. Outcomes identified through this process recognise only one of many aspects of the total decision-making process.

Many decisions made in clinical nursing involve several alternative choices and decision-analysis approaches require the existence of mutually exclusive alternatives. Corcoran notes from these studies that nurses are noticeably reluctant to use decision-analysis as it makes subjective data seem precise and removes the professional artistry from clinical judgement. The protests of nurses from these studies, unimpressed by decision-analysis theory on the grounds that it reduces patients problems to numbers, dehumanises patient care, and takes an unacceptable length of time to use, are also illustrated. Corcoran concludes that decision-analysis theory does not appear to be suitable for application to the complex decision-making of nursing practice.

Thiele *et al* (1986) investigated an assumption of decision-analysis theory which held that cue recognition is learnt by experience. This quantitative

study examined the cue recognition abilities of eighty nursing students utilising computer simulations of patients in a variety of settings. Pre-testing and post-testing of students occurred, during which students sorted and identified cues of different situations. Thiele *et al* conclude that cue sorting and recognition can be taught through Computer Assisted Instruction (CAI), rather than relying solely upon actual experience as the teacher of clinical judgement abilities. However, no evaluative measures were discussed by the researchers to establish the potential impact of teaching cue recognition on the students' decision-making in clinical practice. These weaknesses raise doubts about the applicability of these findings, gained through simulation, to nurses decision-making within the context of real practice.

SUMMARY OF STUDIES USING DECISION-ANALYSIS THEORY

The findings of these studies are useful insofar as they expose the mismatch between the nurses' style of thinking and the use of a specified linear process based on mathematical probability (Hammond *et al* 1967; Aspinall 1976). This body of early research was also important because it unmasked the covert role of intuition and experience within nurses' decision-making (Grier 1976; Corcoran 1985). Further, these studies introduced methodological approaches which have been retained by traditionalists who seek to control the research environment by the use of simulated conditions. The potential lack of generalisability of the findings has not prevented these methods from becoming popular within this category of research. It is important to note that early decision-analysis research, along with studies based on information-processing theory, became the foundation for the later postpositivist studies of nurses' clinical reasoning at different levels of expertise.

STUDIES BASED UPON INFORMATION-PROCESSING THEORY

Information-processing theory derives from work within human problem-solving (Newell and Simon 1972) and informs the field now known as cognitive science. The information-processing approach defines the reasoning processes by recording and analysing each of the steps that the practitioners may think through as they endeavour to solve the clinical problems that their patients may exhibit (Elstein and Bordage 1979). This theory provides the basis of a verbal protocol technique, which requires the individual to dictate out loud each thought in the process of reaching a decision or diagnosis (Elstein *et al* 1978). This model identifies four components within the

diagnostic judgement process which include cue acquisition, hypothesis generation, cue interpretation and hypothesis evaluation. Elstein's model and technique of verbal protocol along with a similar hypothetico-deductive model developed by Kassirer and Gorry (1978), have become very influential in medical and nursing studies of clinical reasoning.

In 1980 Gordon utilised a conceptual framework based on information-processing to investigate strategies nurses use to select or eliminate hypotheses in the process of making a diagnosis of the state-of-the patient (SOP). This experiment involved a written case study of a patient in which information about the 'person' was provided as it was requested by the subjects, allowing the researcher to track decision-making through the diagnostic strategies employed. The nurses were asked to perform two tasks in making a patient diagnosis, the first provided unlimited information and the second only limited information about the patient. The sample consisted on sixty Master of Science in Nursing students attending four universities. These nurses had an average of seven years of experience in nursing and had demonstrated knowledge of the diagnostic concepts used in the study.

Gordon claims that most of the nurses began by using a mixed hypothesis testing strategy in preference to single hypothesis testing as they worked toward a diagnosis of the SOP. This result was accompanied by a decrease in multiple hypothesis testing and an increase of single hypothesis testing as the nurses progressed toward diagnosing the SOP. Where the nurses could request any information, 48% attained a correct diagnosis, and in the limited condition, where only twelve pieces of information were available, 88% of the nurses were accurate. One explanation for these findings may lie in the cognitive stress of dealing with boundless information in comparison with receiving limited information on which to base a decision.

Gordon asserts the hypothesis testing procedures and strategies of the study should provide nurses with the heuristic rules for solution of the problem. However, the study highlights that the nurses, faced with a situation of uncertainty, had confidence in their perceptions of the likely outcomes, based upon their own experience. This observation is particularly significant as it appears that nurses need to place the problem into a contextual perspective which relates meaningfully to their experience. Gordon's study offers useful insight into nurses' diagnostic strategies in simulated situations. However, no

research, at that time, examined nurses' decision-making for consistency between simulated and actual situations. Therefore these findings, gained from structuring nurses' thinking about 'pretend' patients may not be generalisable to nurses' thought processes in the real world of practice.

A further exploratory study into nurses' rapid decision-making in critical care units was undertaken by Baumann and Bourbannais (1982). This study is notable because it was among the first to consider the demographic differences between the participants involved in the study. The convenience sample of fifty nurses varied from less than one year to nine years of experience in critical care. Each nurse was given a written patient scenario and asked to complete a semi-structured questionnaire concerning the decision-making processes used.

Baumann and Bourbannais assert that the nurses' knowledge and experience were the most important factors influencing rapid decision-making. Also, they show that the nurses had difficulty providing a theoretical rationale for their decisions. Further, they conclude that many nursing decisions for critically ill patients were carried out prior to physician assistance, and were based on the patients' problems and not the medical diagnosis. Baumann and Bourbannais's research also drew attention to potential variation according to the nurses' levels of knowledge and experience, thus providing further evidence of the intuitive component of nurses' decision-making. However, these findings are limited by the use of a convenience sample and the potentially artificial effects of the use of simulation on the nurses' decision-making.

In 1983 del Bueno completed a study which aimed to evaluate a simulation technique involving video-taped patient situations to determine if there was a measurable difference among nurses' clinical decision-making skills. This study had progressed beyond the earlier studies to consider nurses at different levels of practice. The responses from the eighty-five registered nurses and five nursing students produced a correlation between educational background and experience, as the experienced baccalaureate nurses obtained the most correct answers. However, the value of this method is questioned as del Bueno does not consider factors such as risk, urgency, possible consequences, previous experience and anxiety which could potentially complicate a nurse's clinical judgement in practice. del Bueno's dependence on patient simulation to evaluate differences between novice and experienced clinical nurses is also

questioned as the relevance of these findings to the nurses' judgements in clinical practice are unknown.

Carnevali *et al* (1984) drew on earlier clinical reasoning research (Elstein *et al* 1978; Kassirer and Gorry 1978; Gordon 1980) to construct a model of the nurses' diagnostic reasoning process in practice. The authors assert that three factors modify the process of diagnostic reasoning. These include the nature and background of the diagnostician, the nature of the setting, and the nature of the diagnostic task. The clinical picture of the patient's situation, for example, was often found to be quite different from that described in textbooks or research simulation.

Carnevali *et al* also note that experienced clinicians in earlier studies often recognise a problem or sense with certainty an absence of problems without conscious thought of cues used or weighting of their importance. Further, these authors describe an expert's response to intuitive recognition by additional data gathering, to confirm or discard their diagnosis. Their work offers further evidence of the relationship between intuitive and analytical processes in nurses' clinical reasoning.

In the same year Kolodner (1984) undertook a review of psychological research which had compared novice and expert groups through cognitive reasoning. Her review of this body of literature from psychology added to the mounting evidence against the simplistic view of skilled decision-making processes. Kolodner concludes from her literature review that overall, experts are more knowledgeable, better able to apply their knowledge, and more effective in the use of their knowledge than novices. She also asserts that great difficulty is found in the extraction of rules from experts to build systems of artificial intelligence.

Kolodner concludes that these early artificial expert systems lack the skilled clinician's ability to turn unrelated facts into expert knowledge by learning from 'case' experience. She notes the expert's capacity to integrate changed understanding from new experiences in light of previous cases into memory for use in a future case. Kolodner theorises that even if a novice and an expert have the same information, the expert's experience would offer better ways of using it. She also notes these artificial systems, based on rules and accumulated facts, worked slower and slower, contrary to the faster reasoning

of the experts. The growing recognition of the role of experiential learning emergent in the psychology literature clearly mirrors that found in research into nurses' clinical reasoning.

A further study conducted by Tanner *et al* (1987) tested how competent and developing nurses made clinical judgements within an ongoing research programme exploring nurses' clinical reasoning (Putzier *et al* 1985; Westfall *et al* 1986). The research design incorporated Elstein *et al*'s (1978) information-processing model, verbal protocol and simulated patient situations. A convenience sample of fifteen junior nursing students, thirteen senior nursing students and fifteen practising nurses were asked to give their initial thoughts about the situation and then to seek further information, ask questions and decide on management under a twenty minute time restraint.

Tanner *et al* claim that the practising nurses made diagnostic hypotheses early in the encounter and used systematic information gathering to accept or discard hypotheses. These researchers assert that these findings were consistent with Elstein *et al*'s (1978) studies of physicians and medical students initial decision-making processes. However, Tanner *et al* could offer no explanation, based on the information-processing theory, as to why little difference emerged between groups that had such marked variation in 'knowledge relevant to the task'.

This study is also restricted through the use of the simulation and verbal protocol approach. There is no sound research-based evidence to support the belief that findings based on contrived scenarios can be generalised to nurses practice. The usefulness of this theoretical framework and methodology to ascertain differences in nurses' clinical decision-making is also questionable. Tanner *et al*'s own reservations provide further support for the increasing evidence that simulation may not be an effective method for understanding decision-making within the context of practice. These researchers conclude that research using natural observation of beginners and experts making clinical judgements in practice is clearly warranted.

A comparative study undertaken by Holden and Klingner (1988) sought to examine the effects of education and experience on nurses' problem-solving. First year nursing students, final year nursing students, junior and senior nursing students who were parents and experienced paediatric nurses were

asked to examine why the infants were crying in two computer-simulated scenarios. Holden and Klingner maintain that the experienced groups of paediatric nurses and student parents differed from the other student nurses by using less information and selecting different information units during the process. The students who were also parents emerged as the most accurate, as they did not select any incorrect hypotheses for the infants' crying.

These findings suggest a variation in the ability of nurses with different levels of education and experience to make accurate clinical judgements. The authors recommend computer-presented simulations as tools to assist nurses to understand problem-solving processes and to promote clinical skill development. This recommendation must be approached with caution, however, as findings of studies using written, video-taped and computer-orchestrated simulations of patient situations may have no relevance to nurses' decision-making in clinical practice.

A further study was undertaken by del Bueno (1989) which built on her previous work (del Bueno 1983) exploring the relationship between nurses' experience, education and ability to make judgements. del Bueno used video simulations of patients with multiple problems to test five hundred and sixty-three nurses. This study was based on the assumption that nurses absorb and process observed simulated information in the same way they would in an actual clinical situation. Twenty per cent of the sample were diploma nurses, forty-eight per cent associate degree nurses and thirty-two per cent baccalaureate nurses, working in ten hospitals. The criteria used to identify the nurses' level of experience was three months in the current clinical area, regardless of previous experience elsewhere.

Unsurprisingly, del Bueno could offer no definite conclusions regarding relationships between nurses' education, experience and their ability to make clinical judgements. Overall, experienced nurses were found to give more acceptable and fewer unacceptable responses than inexperienced nurses. Again, as in the previous studies, no recognition was made of the potential differences between nurses' decision-making in simulated and actual clinical practice. However, del Bueno does acknowledge that the most reliable test would be the nurses' performances in actual situations. Finally, the criteria used to identify experience appeared to be arbitrary, without any base in research evidence.

Itano (1989) undertook a triangulated comparative study of the clinical judgement processes used by experienced nurses and nursing students on their assessment of the state-of-the-patient (SOP) at the commencement of a shift. The sample group included thirteen nurses or highly skilled judgement-makers (HSJMs) and thirteen senior baccalaureate nursing students. The HSJMs ranged from one to sixteen years of experience and the criteria of selection used to identify HSJMs as experts was supposedly based on Benner's (1984) work. The chosen sample is therefore confusing and contradictory, as Benner describes expert nurses as those having more than five years of experience. The nurses were observed reading the patients' nursing records, taking 'handover report' and tape recorded during a nurse-patient interview that occurred in practice. They were then asked to describe their conclusions about the SOP.

Three nursing faculty members were then asked to rate the nurse's judgement process on a five inch line scale from novice (left) to expert (right). A rating scale taken from Carnevali *et al*'s (1984) model of diagnostic reasoning was also utilised. The cues were then identified from the tape recorded patient-nurse interviews and classified according to Gordon's (1980) scheme of cue classification. Itano concludes that the novices did not collect as many cues as the experienced nurses and the types of cues collected were elicited in the same proportion by both groups. Itano asserts that differences between novices and experts did not appear to lie in the use of cue type. Itano, like Tanner *et al* (1987), experienced the same difficulties when trying to use a cognitive model of clinical reasoning to identify the differences between novices and skilled nurses.

Padrick (1990), in response to the concerns raised in previous studies, compared nurses' decision-making processes during simulation with accounts taken from practice. A convenience sample of thirty-four hospice nurses were asked to make decisions on pain control regimes for patients. The nurses were given three written patient simulations and asked to recall decision-making in three actual clinical episodes of patient care, using a set verbal protocol. The nurses were interviewed and the protocols analysed using categories taken from previous research which were based on the information-processing model.

Statistical analysis demonstrated no apparent differences between practice and simulation on the nurses' initial approach to the simulated scenarios and actual patient situations. There were, however, significant differences between the nurses' responses to the practice and simulation situations in the 'alternatives' the nurses' considered, the 'reporting strategy' and the 'overall approach' they used. Experience and education did not appear to have an effect on the differences between practice and simulation on the 'process' variables, and there was no interaction between the 'variables'. Padrick (1990) asserts that there may be significant differences between practice and simulation in decision-making processes used by the nurses. She concludes, on the basis of her findings, that the validity of using simulations to study clinical decision-making is highly questionable and may not be warranted. Padrick strongly supports the view that more research on clinical decision-making should occur using concurrent or retrospective accounts immediately following events in nurses' practice. This study is of particular importance as it offers the only research-based comparison between simulation and actual practice. As such, the findings offer firm support for the growing concern that findings generated from simulations lack relevance in nurses' decision-making during clinical practice.

In 1991 Jones carried out a study of the way in which nurses reach a clinical diagnosis using the verbal protocol technique. The sample included an 'expert' group of ten ward sisters and a 'novice' group of twelve third-year student nurses. Simulated patient case studies requiring assessment of pressure sore risk were given to the nurses and their decision-making was 'mapped' through a verbal protocol. Jones found that, on average, the 'experts' tended to give longer protocols than the 'novices,' but often failed to make use of the extra information they had collected and instead made inferences from experiences outside of the data given in the scenarios.

The ward sisters, identified as 'experts' through unclear criteria, were found to use a model of simultaneous information gathering and interpretation of data, whereas 'novices' collected all of the data before diagnosing the problems. Jones used the findings to build a small expert system and recommended students use of CAI to learn how to reason in clinical practice. The difficulties in capturing expert decision-making processes, identified in previous studies, requires the reader to approach the production of an nurse expert system with

suspicion. Once again these findings must be approached with caution due to the use of simulation methods.

In 1995 Greenwood and King undertook a study to examine the clinical reasoning of nine pairs of 'novice' and 'expert' orthopaedic nurses caring for patients who had undergone total hip replacements. The experts had acknowledged expertise by peers, four to eight years of experience, recognised communication skills and commitment to professional development. The novices had at least three months of orthopaedic experience. A think-aloud technique was used in which a pair of novice-expert practitioners assessed a patient between one and three days following surgery with the researcher present, followed by a retrospective session. Greenwood and King coded the categories using Jones's (1989) framework of analysis.

The findings of the study identified experts used more basic and subordinate concepts in clinical reasoning and more strategies to manipulate information than novices. The inclusion and complexity of the concepts, which were almost exclusively physically orientated, were found to be the same between novices and experts. The lack of substantial differences between the expert and novice groups may have been due to the use of the framework incorporated within the verbal protocol technique. This technique may have prevented the nurses from describing thinking which did not follow the hypothetico-deductive process. Also, the pre-coded framework may have restricted inductive identification of differences between the groups during the data analysis. A further explanation for the lack of differences may have lain in the criteria of selection used to sample the nurses. It is possible that some of the nurses included in the respective groups may not have been novices or experts in practice.

Lamond *et al* (1996) conducted a study to identify the sources of information used by general medical and general surgical nurses when making assessment judgements, in an attempt to collect data which could then be used to construct realistic simulated problem situations. A convenience sample of one hundred and four nurses was interviewed using a semi-structured schedule formulated from the analysis of sixty unstructured interviews. The nurses were interviewed about the care they had been involved in during a shift. Content analysis produced a coding framework with which Ethnograph was used to group the sources of information used by the nurses during practice.

The findings of the study identified four main sources of information: verbal 41%; observation 21%; prior knowledge 20% and written 17%. Both medical and surgical nurses appeared to use verbal information and written information to a similar degree. However, it appeared that surgical nurses used observation and prior knowledge slightly more frequently as a source than the medical nurses. No effort was made to differentiate between the nurses' levels of education, experience and/or expertise. This study may also be limited by the type of information included within the coding framework and its relationship to previous experience and intuitive grasp of the situation.

Thompson *et al* (1990) provided a useful review of the expertise literature from cognitive science. They attempted to develop a framework using network theory to guide future study of clinical expertise and expert system development. Thompson *et al* question the reliance on verbal protocol analysis as experts often have difficulty expressing what they know or stating their true rationale for particular decisions. Instead, these authors suggest the methodology of Cooke and McDonald's (1986) cognitive 'network' theory as a potential alternative to interview and verbal protocol analysis in the study of expert knowledge. They support the use of quantitative approaches to map the mental processes of experts into the formation of expert systems.

An expert system for nursing is meant to be a practical application in which knowledge is transformed into guidelines for practice. This system assumes that experts are able at least partially to articulate the nature of the logic and/or knowledge used in decision-making, and that it can be applied in any similar situation. This assumption is highly contentious, as the alternate school of thought believes that experts know more than they can ever tell (Polanyi 1958). Expert systems, therefore, remain dubious in their ability to imitate the mental processes that are used by experts, and the usefulness of this type of system for non-experts is not established in nursing.

Jasper (1994) offered a helpful concept analysis of the term expert from the cognitive literature and found the defining attributes of an expert included the possession of a specialised body of knowledge or skill; extensive experience in that field of practice; highly developed levels of pattern recognition and acknowledgement of expert status by others. Hampton (1994) followed with a concept analysis of expertise and found the following characteristics from the cognitive science literature (Thompson *et al* 1990). Expertise was found to

include quality decision making; intuition; knowledge; adept psychomotor skills and clinical specialisation. The review of literature from cognitive psychology focused upon 'chunking theory', 'network theory' and 'schema theory,' which involves short and long term (associative) memory. Chunking theory suggests that intuitive judgement is based on experiences that once involved analytical steps. Information becomes chunked into patterns as experience builds, enabling the expert to bypass the sustained, systematic thought processes used by the novice.

Boshuizen and Schmidt (1995) offer a similar view of research into medical expertise through psychological models of clinical reasoning. The long-standing theory that the human mind can be trained for expert judgement through logical thinking, problem-solving or creativity appears to have been superseded by findings that experts in a specific domain do not develop separate problem-solving skills which can be applied across domains. Instead domain knowledge and associated skills for using this knowledge in problem solving has been shown to develop simultaneously.

Canadian, British and American medical research groups support a stage theory in which knowledge acquisition and clinical reasoning go hand in hand during the development of medical expertise. The theory supported by these researchers suggests that as long as new information matched an 'active illness script', no active reasoning was required for experts. Only in case of severe mismatches or conflict did they find the expert engaged in active clinical reasoning. Novices, however, clearly used linear analytical reasoning, and were not always able to identify expected signs and symptoms in patients' situations requiring active monitoring by more skilled clinicians.

Rivett and Higgs (1995) add to the mounting evidence that studies using cognitive models are unable to demonstrate major differences in the thinking of novice and expert health professionals. These researchers recognise the controversy that surrounds the issue of whether experts use the hypothetico-deductive model to any great extent in practice. Enforcement of organised verbal accounts through simulation, retrospective and think-aloud techniques produced a similar description of the steps of the process by novices and experts. The hypothetico-deductive process appears to be commonly used by novices, who apply strategies which are not dependent upon a highly developed knowledge base to make judgements in clinical practice. Experts

have been found in medical and nursing studies to use processes which attempt to transform the problem into a pattern which is recognised through extensive knowledge (Papa *et al* 1990; Boshuizen and Schmidt 1995).

Higgs and Jones (1995) conclude expertise involves experts who excel mainly in their own domains and perceive large meaningful patterns in that field. Experts are seen as much faster than novices at performing the skills of their domain. They quickly solve problems with little error, and have superior short-term and long-term memory. Higgs and Jones describe experts as seeing and representing a problem in their field at a deeper level than novices who tend to represent a problem at a superficial level. Higgs and Jones believe that experts spend a great deal of time analysing a problem qualitatively, have strong self-monitoring skills and have a depth of understanding of the clinical problem which includes the client's perspective.

Radwin (1995) critiqued studies of nurses' clinical decision-making and also noted that the criteria of selection of participants within novice and expert groups was highly contentious. In addition, Radwin maintains that the results from qualitative studies suggested the criterion of years spent in practice may not effectively define experience as it relates to clinical reasoning. Radwin voiced concerns regarding the lack of relevance of information-processing and decision-analysis theories to expert decision-making. First, because of the absence of relevant factors such as emotions and intuition or 'gut feelings' from the processes. Secondly, because the use of simulation methods based upon analytical models may not sufficiently approximate real-life decision-making as it occurs in practice. Radwin suggests that researchers conducting studies based upon information-processing and decision-analysis theory assume that reasoning results in the identification of a diagnosis, patient problem or dysfunction whereas this may not always be the case.

By contrast, investigators using naturalistic methods did not find that decision-making began or resulted in a diagnosis, problem or dysfunction. Radwin refers to several recent studies have used naturalistic methods of inquiry to examine clinical decision-making in nursing (Radwin 1994; Jenny and Logan 1992; Tanner *et al* 1993; Alexander 1991; Horvath *et al* 1990). These studies show the nurses used their understanding or knowledge of a specific patient (knowing the patient) to make choices in the decision-making process. This process varies considerably from the steps of the analytical models, as the

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nurses did not proceed through stages in which information is 'gathered' or 'clustered'. The nurses in these studies did not generate or test hypotheses or assign probabilities and values to actions and outcomes. Radwin concludes that the concept of 'knowing the patient' has been obscured in many studies based on the rational model process. It would seem that structured studies of nurses decision-making provide a very restricted understanding of aspects of judgement in practice.

SUMMARY OF STUDIES BASED ON INFORMATION-PROCESSING THEORY

The studies reviewed above are based on information-processing theory and seek to examine the differences between novices and experts. Findings from these studies identify that experts are more accurate (del Bueno 1983 1989) and have more knowledge though they required fewer cues, to make decisions than novices (Gordon 1980; Jones 1991). However, the information-processing model does not provide an altogether convincing explanation for the differences in reasoning of novices and experts (Tanner *et al* 1987; Greenwood and King 1995). Instead, experts appear to draw heavily on experience (Baumann and Bourbannais 1982; Holden and Klingner 1988; Jones 1991) and intuition (Carnevali *et al* 1984) during decision-making, irrespective of the information-giving process used during the simulated scenarios of the studies.

The simulated nature of the methodology used in these studies also means that findings may not be easily generalised to the context of nurses' actual practice (Padrick 1990). Some researchers conclude that further studies should occur in the complex world of real practice to increase their credibility (Tanner *et al* 1987; Padrick 1990). Irrespective of these calls, sustained efforts continue to be made to invent expert systems which will incorporate the knowledge of experts gained through studies using simulated scenarios (Jones 1991; Thompson *et al* 1990).

Interestingly, later models in cognitive psychology such as chunking and schema theories incorporated the processing of information as a pattern to mimic experience and intuitive recognition (Hampton 1994). Recognition that clinical reasoning altered with the acquisition of expertise, rather than following a simple process of logic was a major finding in this body of research (Jasper 1994; Hampton 1994; Boshuizen and Schmidt 1995).

CHAPTER SUMMARY

In summary these cognitive studies of clinical reasoning are based on one paradigmatic category of research which attempts to further understanding of nursing expertise. This body of research displays common findings and shared methodological concerns which are of importance to researchers within this field. The lack of a close correlation between the linear processes of decision theory and the nurses' decision-making has been clearly recognised (Hammond *et al* 1967; Grier 1976; Aspinall 1976). Importantly, the participants felt that the enforced linear process removed the intrinsic artistry from their clinical judgements. Thus the decision-analysis model appears to offer little in terms of a potential framework to consider the clinical reasoning of nurses at varying levels of expertise.

Early studies based on the information-processing model also appear to suffer from lack of relevance to expert nurses' decision-making. Studies show that skilled nurses base their decision-making upon knowledge, experience and intuition, rather than following a linear cognitive process (Hammond *et al* 1967; Grier 1976; Aspinall 1976; Gordon 1980; Baumann and Bourbannais 1982; del Bueno 1983 1989; Carnevali *et al* 1984; Holden and Klingner 1988; Jones 1991). Further experts appear to use their extensive knowledge to transform problems into recognisable patterns (Radwin 1995; Rivett and Higgs 1995). It follows that studies which enforce methods incorporating the linear analytical process are unable to clearly discriminate between experts and novices in their clinical reasoning (Elstein *et al* 1978; Tanner *et al* 1987; Itano 1989; Rivett and Higgs 1995).

Studies based on decision-analysis and information-processing theory seek to control the process of decision-making by using simulation rather than practice (Hammond *et al* 1967; Grier 1976; Aspinall 1976; Gordon 1980; Baumann and Bourbannais 1982; Jones 1991). Concerns that simulation may not reflect decision-making as it occurs in practice were increasingly voiced (del Bueno 1983; Carnevali *et al* 1984; Radwin 1995). This concern culminated in the demonstration of significant differences between the decision-making processes of nurses during practice and simulation (Padrick 1990). It appears that enforcement of organised verbal protocols during accounts of practice may prevent novice and expert nurses from describing a completely different clinical reasoning process (Jones 1991; Greenwood and King 1995; Rivett and Higgs 1995). Observation and concurrent or

retrospective accounts immediately following events in practice of novices and experts as they perform clinical judgements in practice are strongly recommended for future research (Tanner *et al* 1987; Itano 1989; Padrick 1990). As a result of these concerns the validity of simulation and verbal protocol approaches to ascertain differences in novice and expert nurses' clinical decision-making are seriously questioned.

Another emergent methodological concern surrounds the criteria of sample selection for participants in novice and expert groups. A range of criteria are used in these studies to select participants which does not appear to be based upon sound research evidence (del Bueno 1989; Itano 1989; Jones 1991). Such arbitrary criteria provides little certainty that the participants are novices or experts within their field (Radwin 1995).

Early cognitive theories assume that experts are able fully to articulate the logic and/or knowledge used in decision-making, and that knowledge can be applied outside of the context-specific situation (Thompson *et al* 1990). Thus the defining attributes of an expert, according to cognitive literature, include the possession of a specialised body of knowledge or skill, extensive experience in that field of practice, speed and accuracy in clinical judgement, highly developed levels of pattern recognition, and recognition as experts by others in the profession. Further attributes include having a deeper understanding of a field-specific problem and using their understanding of the client's perspective to analyse that problem (Jasper 1994; Higgs and Jones 1995). Characteristics of expertise from the cognitive literature include quality decision-making, intuition, knowledge, adept psychomotor skills and clinical specialisation (Hampton 1994).

Newly emergent cognitive theories attempt to explain intuition and experience in decision-making as recognition of patterns or chunks of information from memory. These theories accept that clinical reasoning alters during the development of expertise i.e. novices commonly use the linear hypothethico-deductive process of reasoning (Hampton 1994; Boshuizen and Schmidt 1995; Rivett and Higgs 1995), while experts engage in active clinical reasoning only in conflicting or confusing cases (Boshuizen and Schmidt 1995).

However, cognitive scientists have continued to study novice and expert groups using linear processes, in the belief that expert systems can be built

using a rule-based linear process extracted from the accumulated knowledge of experts. An expert system is meant to be a practical application in which nursing knowledge is transformed into guidelines for practice using methods that resemble the mental processes used by experts (Jones 1991). Expert systems continue to be questioned as to their ability to imitate the expert who learns from experience (Kolodner 1984). Further, their usefulness as teaching techniques for the non-expert has not been adequately established in nursing.

In conclusion there are a number of major methodological concerns which surround research using cognitive models of clinical reasoning to investigate differences between novices and experts. These weaknesses of method cast shadows over the credibility of the findings, and provide an incomplete picture of the differences between the neophyte and the skilled nurse. These studies raise questions about the continued use of such methods and the possibility of adopting alternate strategies for research within the real world of practice. Experience and intuition emerge as vital ingredients in skilled nurses' decision-making. Gaining an understanding of the clinicians' thought processes in practice appears vital if the differences between novice and expert nurses are to be identified. Therefore Chapter 3 explores the understanding of expertise through a review of the interpretive studies of nurses' clinical judgement in the real world.

CHAPTER THREE:
UNDERSTANDING EXPERTISE: INTERPRETIVE STUDIES OF NOVICE AND EXPERT NURSES' CLINICAL JUDGEMENT

INTRODUCTION

This chapter addresses the literature which explores the concept of nursing expertise from the interpretive paradigms of critical social theory and constructivism. These studies share ontological and epistemological assumptions which provide an alternative means of differentiating between novice and expert nurses clinical judgement. They utilise qualitative methods and focus upon nurses' perceptions of knowledge, clinical experience, emotions and intuitive feelings within judgements made in practice.

These studies have been heavily influenced by the interpretive research of Dreyfus and Dreyfus (1980) and Benner (1984) in the field of expertise. Therefore the Dreyfus and Dreyfus five stage model is briefly described, followed by a detailed examination of Benner's adaptation of this model to the development of nurses' expertise. Studies exploring clinical judgement and expert practice based on Benner's model are then presented. Phenomenological studies of clinical judgement and expert practice are followed by studies which explore differences between beginner's and expert's practice based on Benner's model. Finally, Benner, Tanner and Chesla's (1996) revision of the Benner model of nursing expertise is examined.

THE DREYFUS AND DREYFUS (1980) FIVE STAGE MODEL OF SKILL ACQUISITION

The Dreyfus and Dreyfus (1980) model of skill acquisition emerged from a study of the decision-making of chess players and air force pilots, undertaken between 1977 and 1980. The model incorporates the five stages of 'novice', 'advanced beginner', 'competent', 'proficient' and 'expert'. This model does not employ context-free criteria to identify talents or traits indicative of expertise. Instead it identifies qualitatively different perceptions of task and modes of decision-making as the learner's skills improve within the field.

Dreyfus and Dreyfus claim that these qualitative changes reflect movement in four general 'aspects' across the five stages of performance. The first 'aspect,' '(components)' involves movement from the novice's

dependence on abstract principles to the expert's use of past concrete experience to guide practice. The second 'aspect', '(perspective)' implies a change in the novice's perception of the new situation which is seen less and less as a compilation of equal parts and more and more as an 'experienced whole' in which only certain parts are relevant at a time to the expert. The third 'aspect,' '(decision)' necessitates a shift from the novice's reliance on analytical rule-based thinking to the expert's use of intuition. The fourth 'aspect,' '(commitment)' incorporates a shift from the detached observer role of the novice to that of the expert's 'involved performer' in the situation.

This interpretive model, heavily dependent on the 'emic' or participant's perspective, provides an explanation of the differences in decision-making of individuals with variations in knowledge and skill which is very different from the cognitive models described in Chapter Two. Dreyfus and Dreyfus's model was explored for its potential use in the context of nursing by Benner (1984), and her research is described in detail in the following section.

BENNER'S (1984) MODEL OF NURSING EXPERTISE

Benner (1984) was the first to conduct a major qualitative study to investigate the clinical skills and judgement of nurses at different levels of practice. This study proved particularly influential, and the approach to sampling, methodology, analysis and findings has guided many interpretive studies over the last twelve years in the field of clinical expertise and decision-making. Whilst its influence has been outstanding, sampling and methodological concerns provide cause for concern in relation to the robustness of the findings of the study. Initially, Benner selected nurses from three different hospitals and focused upon identifying tangible differences between novice and expert participants by comparing their descriptions of the same clinical incident.

The 'expert' group involved twenty-one pairs of preceptors and the novice group incorporated their newly graduated partners. A criticism of the sampling can be made because the selection criteria and demographic details of these participants were not clearly presented. It can only be assumed that the graduates have been classified as novices on the grounds of their newness to practice as qualified nurses. Further conjecture is required, as the preceptor

nurses are construed as experts on the basis of recognition of their clinical expertise by staff development officers, head nurses and/or peers. An interesting inclusion in the criteria is the requirement that the preceptors must have at least five years of experience within the same field. Alternatively a noticeable absence from the selection criteria is the nurses' educational background. Sampling of novice and expert nurses according to these selection criteria is not supported by previous research and raises concerns about the credibility of their use within the study.

Benner sought to highlight the differences between the nurses by conducting individual interviews. These interviews were based on shared patient care situations, which contained elements which stood out as important to both novices and experts. The methods used to clarify further the characteristics of nurse performance at different levels of expertise were, however, obscure. Additional interviews and/or participant observations occurred with fifty-one experienced nurse clinicians, eleven newly graduated nurses and five senior nursing students from six different hospitals. The experienced nurses were briefed as to the nature of the clinical incidents which should be brought to the small focus group interviews.

The retrospective nature of these accounts is troubling, since the credibility of the data is dependent upon the nurses' memory of important details from past episodes in practice. These nurses were later observed during their practice, to provide further contextual episodes for analysis. The weakness of this approach lies in the decision to separate these two data collection methods when the interviews could have been based on observed episodes of practice. The tape-recorded interviews and field notes were transcribed and interpreted using a phenomenological and constant comparative approach.

Benner identified thirty-one 'competencies' and seven 'domains of knowledge' through analysis of the nurses' accounts of practice. These domains included the helping role, the teaching-coaching function, the diagnostic and patient-monitoring function, effective management of rapidly changing situations, administering and monitoring therapeutic interventions and regimens, monitoring and ensuring the quality of health care practices and organisational and work-role competencies. These 'domains' and 'competencies' are described using examplars from the interview data which offer a clear audit trail of this section of the findings.

Benner's findings support the applicability of the Dreyfus and Dreyfus's (1980) model of skill acquisition to the development of nurses' clinical expertise. The five stages of development in nurse performance adapted from the work of Dreyfus and Dreyfus are critically examined below. In particular, the lack of an audit trail of examplars to illustrate the major differences in characteristics at each of the five levels of nurse performance is highlighted as an issue of concern.

THE NOVICE GROUP

Benner drew on Dreyfus and Dreyfus's description of the novice as a newly qualified nurse with no experience of the practice situation. The parameters of the novice stage are unclear, but the above description suggests these nurses are 'novices' in the first few months following registration. Benner contends that the novice has gained knowledge in the form of detached, objective 'attributes' or facts, such as vital signs which can be recognised without previous experience of the situation. Further Benner maintains that these attributes guide actions in accordance with context-free rules of clinical reasoning, making the novice's behaviour extremely limited and inflexible in practice. Yet the credibility of Benner's description of the behaviour, knowledge and thought processes of novice nurses is weakened by the lack of data-derived examplars to support her conclusions. This is a significant absence, since evidence is needed to corroborate the claim that novice nurses demonstrate the same characteristics described within the Dreyfus and Dreyfus' novice stage of skill acquisition. Benner's confidence in the applicability of this model to nursing is not, therefore, authenticated at the initial level of nurse performance.

THE ADVANCED BEGINNER GROUP

Benner describes 'advanced beginners' as nurses who have sufficient experience to note recurring 'elements' which have meaning and importance within the context of a clinical situation. Thus advanced beginners, unlike novices, have the ability to recognise both context-free and some situational elements during practice. However, she claims advanced beginners continue to act like novices, recognising learned elements, applying rules and procedures, feeling detached and not responsible for the outcome of their practice. These similarities make it difficult clearly to differentiate between the characteristics of novices and advanced beginners. The absence of interview data showing that these characteristics emerged from inductive

analysis is also of deep concern. Furthermore, it is impossible without such evidence to verify Benner's claims that the characteristics of advanced beginner nurses are the same as those described in the advanced beginner stage of the Dreyfus and Dreyfus model.

Benner clearly states that experience is responsible for the development from novice to advanced beginner; yet no indication of the period of time nurses should spend in practice to achieve this level is given. It can be assumed that these nurses have worked longer than novices and less than competent nurses in the field. If this postulation is correct, then advanced beginners are likely to have spent between a few months and two years in the same or similar fields of practice. Benner's assertion that experience is responsible for progression beyond the advanced beginner level is made unclear by this failure to relate expertise to length of time.

THE COMPETENT GROUP

Benner depicts the 'competent' nurse as one who has gained an overwhelming number of situational and context-free elements through experience in practice. These nurses have learnt that a particular cluster of elements means a potential outcome may occur. Memories of previous plans and outcomes influence their decisions, and a stronger sense of responsibility and involvement in relation to the patient's long term goals is also noted. Benner describes these nurses' continued use of analytical reasoning processes to discern the significance of the 'attributes' of a patients situation. Thus Benner claims the competent nurse manages patient care in an efficient and organised fashion through conscious planning. Further she suggests that this dependency upon standards and routine procedures makes these nurses very popular amongst the nursing management.

It is not possible to confirm Benner's assertions about the nurses at the competent level, as no interview data is included within the description of the findings. Interestingly, achievement of the competent level is described as taking between two and three years in a similar field of nursing practice. Yet the rationale for this time period cannot be established as there was no auditable decision trail to follow the interpretation and conclusions drawn by the researcher on this issue. Benner concludes that strong parallels exist between the competent stage of the Dreyfus and Dreyfus model and the

competent level within nursing. Again, the absence of examplars prevents confirmation of this conclusion through auditing of the data.

THE PROFICIENT NURSE GROUP

Benner describes the following characteristics of 'proficient' nurses as distinguishable from those of nurses at other levels of expertise. She argues a proficient nurse has the ability to perceive a patient's situation as a whole, in which specific features stand out as more or less important. Thought processes 'just happen,' or occur intuitively, based on memories of previous encounters. Pattern recognition is used to distinguish situational aspects which do not match the nurse's previous experiences. Decisions are reached more easily because of the nurse's ability to recognise subtle changes, and to perceive long term goals and outcomes for patients in familiar situations. Further Benner suggests these nurses use detached analytical thinking to deal with uncertain situations only.

Again, the absence of a clearly auditable trail prevents these distinctions, drawn by Benner, from being supported by evidence. Issues also arise in relation to Benner's confirmation of the applicability of the proficient level of the Dreyfus and Dreyfus model to that found in the nurses' practice. There is little opportunity to establish the credibility of this conclusion without examplars from the data to compare and contrast the characteristics illustrated by Benner with those described by Dreyfus and Dreyfus.

The length of time required for these developmental changes to occur is also not stated, though it may be deduced on the basis of Benner's description of competent nurses taking three years and experts requiring more than five years in similar situations. Thus nurses who have between three and five years of experience within a field might be construed as working at the proficient level. This finding implies that progression from competent to expert nurse may be a process of steady development across a period of time. This relationship between nurses' exposure time, learning through experience and the development of a proficient level of skill is not substantiated within this section of the findings.

THE EXPERT NURSE GROUP

Benner describes the following characteristics of expert nurses and confirms the applicability of the Dreyfus and Dreyfus expert stage to their practice. She

asserts that expert nurses no longer depend upon analytical rules to connect understanding of the patient's situation to correct actions. Instead, expert nurses utilise experience to grasp an intuitive understanding of the problem at hand without having to consider a spectrum of alternative hypotheses. Further, she claims that experts function through a deep understanding of the total situation and the ability to perceive or recognise a situation instantly. Also that experts have the ability to recall similar situations, goals, perspectives, decisions and actions simultaneously to act intuitively. However, Benner notes, experts entering new or different situations employ highly skilled analytical approaches to problem-solving.

Similar concerns in relation to the absence of data exist at the expert level as have been described in the previous four stages of Benner's model of expertise. No data is offered for the reader to confirm Benner's interpretation of the characteristics displayed by expert nurses. Interestingly, Benner does not mention the aspects of intuitive judgement outlined by Dreyfus and Dreyfus within her description of expert nurse judgement. These absences once again make it difficult to confirm the parallels drawn between Benner's findings and the characteristics of experts recounted by Dreyfus and Dreyfus.

Benner identified these experts through nomination by supervisors and as nurses who had at least five years in the same or similar nursing situation. As mentioned previously, the rationale for these criteria is unclear. It can only be assumed that progression from proficient to expert nurse is a process of steady development across a period of time. Yet Benner states that not all nurses will become experts in practice. Thus relationship between time spent learning through experience in the development of an 'expert' in nursing remains a source of confusion as no explanation is offered as to why some nurses may be experts after five years in a field while others may not.

ISSUES ARISING FROM THE STUDY

A major strength of Benner's research is that it offered a new 'clinical incident' technique for investigating decision-making within the context of practice and explicating distinctions between nurses' levels of expertise. Benner's method also provides a vehicle for examination of the role of context-free theory and learning by experience in the development of expert nursing practice. This is particularly important as Benner places great emphasis on learning from experience in the development of clinical expertise.

Further Benner offers a way to explore nurses' understanding of the analytical, emotional and intuitive elements of decision-making in practice. Benner's research is also helpful for gaining an understanding of the degree to which perceptions are involved in advanced nurses' decision-making. The extent of nurses' detachment and engagement in the patients situation during decision-making is also an interesting highlight of her inquiry. Each of these aspects appears to be of considerable importance but are described rather superficially within the study. However it is important to note that these aspects had not been examined at all within previous studies of nurses' cognitive clinical reasoning.

However, as argued throughout the five stages, the study is limited by the lack of examplars from the data, making it difficult to confirm Benner's interpretation of the characteristics of the nurses' levels of performance. Also, the key elements of theoretical knowledge, experience and intuition, are only partially explained and require further research to confirm their importance in the development of expertise. The relationship that Benner describes between analytical and intuitive elements of nurses' decision-making demands further investigation. Finally the applicability of the Dreyfus and Dreyfus model to nursing remains unconfirmed because of the lack of an auditable decision trail between raw data, interpretation and conclusions of the study. The relevance of this five stage model of skill acquisition to nursing practice must remain under question until it is confirmed by further research.

STUDIES EXPLORING CLINICAL JUDGEMENT AND EXPERT PRACTICE BASED ON BENNER'S (1984) MODEL

Interestingly, a further small ethnographic study was conducted within Benner's (1984) overall research project. Gordon (1986), one of Benner's colleagues, sought to analyse a set of job descriptions that defined four progressive levels of nursing in an 'ethno-model of expertise' and to compare it with the Dreyfus and Dreyfus (1980) model of skill acquisition. The sample group was vaguely described as involving nurses working in two surgical units of one hospital over a sixteen month period. The anthropological methods utilised were not described in detail, leaving one to assume that these were the same or similar techniques of data collection and analysis utilised in Benner's larger study. Gordon used data collected in Benner's study to

compare skills in expert clinical practice to the ways in which the nurses in these units defined optimal practice.

Gordon's study revealed that managers of these surgical units relied heavily on standard models to train nurses and to audit nursing practice. They defined optimal nursing practice and knowledge by referring to criteria included in the job descriptions. Emphasis was placed on theoretical scientific knowledge and the nurse as a problem-solver, teacher and scientist. Components of nursing which were not easily measurable (such as experiential or intuitive knowledge) were not recognised or rewarded. Progression through the four levels involved a positive evaluation according to the job description, and a combination of experience and formal education.

Overall, Gordon notes that the dependence of the career structure model on a list of measurable behavioural objectives made it impossible to differentiate between the standard competent nurse and the skilled practitioner with outstanding clinical expertise. She states that:

> when formalism and analytic rationality become the ideal, the implicit, the unformalisable, the intuitive and the holistic traits of expertise become obscured - or even unrecognisable" (Gordon 1986: 96).

Gordon's study provides an interesting investigation of the 'technical rational' (Schön 1983) view of nursing, according to which theoretical knowledge is the most valued. Gordon's conclusion that a theory-driven model of expertise limits understanding and recognition of characteristics of skilled nurses' judgement and practice is strongly supported by evidence included in the findings of the study. However, the powerful influence of Benner's findings and conclusions in relation to expert practice must be taken into account as this may weaken the strength of the points made in this smaller study.

In 1989 Brykczynski conducted a naturalistic study of the clinical knowoedge of nurse practitioners as 'experts' in practice. She focused on judgement as the core of practical intelligence and the most crucial aspect of the clinical knowledge of expert practice. Brykczynski utilised an interpretive approach based on the work of Ebbesen and Konecni (1980) and Tanner (1983), who conclude that studies which use simulation methods are constrained in their capacity to gather a comprehensive understanding of the judgement process as it occurs in the real world of practice. She explored twenty-two purposively

selected nurse practitioners' clinical knowledge of common aspects of practice through paired and individual interviews and participant observation of nurse/patient interactions in practice.

Analysis of the nurse/patient episodes was conducted using an existential phenomenological approach advocated by Benner (1984) to identify emergent themes. These themes were then interpreted using Benner's 'aspects of knowledge', 'domains' and 'competencies' of nursing. The study produced adaptations of each of these for nurse practitioners. Three themes emerged from the analysis of the nurse practitioners' clinical judgement which included discretionary judgement as a central aspect of 'know-how', the importance of background knowledge in skill development, and the nature of practical skills as experience-based.

This work supports the conclusions of previous research that knowledge and experience are of vital importance in the development of nurse performance. However, a limitation in this study, like Gordon's, arises from the non-critical application of Benner's (1984) research to set the original research question, to direct the methodology and guide the analysis of the domains, competencies and clinical judgement of the nurse practitioners. Thus the research supports and reflects rather than questions, the tenets of Benner's domains and levels of nurse performance.

A further qualitative study was conducted in which the decision-making in clinical practice of four expert critical care paediatric nurses was explored (Etheredge 1989). Etheredge observed and then interviewed the nurses about critical incidents which occurred during practice at the end of their work shifts. Thematic analysis was used to categorise the content of the interviews with the aim of critically investigating decision-making behaviours and 'goodness of fit' with the Elstein *et al.* (1978) model of diagnostic reasoning and/or the Dreyfus and Dreyfus (1980) model of skill acquisition.

The data generated four categories which were particularly important in relation to the nurses' decision-making. These included 'deciding and understanding the patient problem', 'gathering information about the patient', 'interacting with other staff' and 'deciding what to do'. The results of this study support elements of both models in the experts' decision-making in clinical practice. Etheredge also highlights the need for more research using

observation and retrospective interview of events in the clinical setting, rather than using simulation to give a greater understanding of nurses' decision-making. The findings of this study are useful as they offer further evidence of the co-existence of intuitive and analytical processes in expert nurses' decision-making in practice.

INTERPRETIVE STUDIES OF CLINICAL JUDGEMENT AND EXPERT PRACTICE

In 1991 Cahill conducted a phenomenological study exploring nurses' perceptions of effective nursing practice. Seven experienced clinical nurses from general and psychiatric settings were asked to recall details of a clinical incident which demonstrated effective practice. These accounts were presented in written form and the nurses' were subsequently interviewed about the incidents. Analysis followed the tradition of hermeneutic interpretation of text. Intra-personal, inter-personal and extra-personal factors emerged as the three major themes involved in the phenomena of effective nursing. Intra-personal factors involved feelings of wanting to help or comfort, followed by feelings of achievement or satisfaction. Interpersonal factors related to the reciprocity of the therapeutic relationship between the nurse and the patient or relative. Extra-personal factors included difficulties nurses experienced when there was a lack of a trust and an effective working relationship with doctors.

Other factors included availability and control of resources, freedom to practice with clearly defined parameters of accountability, and responsibility integrated with the nurses' perceptions of 'knowing what was right' or 'intuition' during effective nursing performance. Cahill asserts that increasing effectiveness in practice requires learning in practice as well as formal educational activities. These nurses had sufficient confidence in their knowledge to defend their clinical judgements to other health professionals. They felt that effective performance was achieved through analysis and integration of previous experiences, use of theory, holding a clear philosophy of nursing, and evaluating the use of nursing strategies within the patients' situations.

Cahill's study offers further recognition of the importance of theoretical and practical knowledge, reflection and intuition, in effective nursing practice. However, surprisingly little is included about the experienced nurses' use of

analytical thinking during decision-making in effective practice. The sampling criteria are unclear, making it difficult to draw conclusions about the participants levels of expertise in this very small study.

In 1992 McMurray conducted a qualitative, interpretive study to identify characteristics and factors influencing community health nurses' (CHNs) clinical expertise. This researcher sought to develop a model of expertise through identification of the differences in the practice of thirty-seven novice and expert CHNs working in district nursing, school and child health fields. The criteria for selection of the novice group, which included five CHNs from child health and five CHNs from district nursing, is rather unclear. The expert nurses were identified by peers and colleagues and included nine from child health, nine from school health and nine from district nursing. Data collection techniques involved participant observation, individual interviews and written retrospective accounts of clinical episodes from the nurses' practice.

McMurray used Tanner's (1984) diagnostic reasoning process as the framework for analysis and as a basis for a model of community nursing expertise. Intuitive reasoning, reflection, experience and personal factors including motivation and receptivity emerge as important variations between the two groups. However, utilisation of Tanner's cognitive model of decision-making draws attention away from these important factors, especially when attempting to identify differences in novice and expert judgement in practice. Interestingly, Tanner later criticised the rigidity of her early model as lacking validity and comprehensiveness in differentiating novice and expert practice (Tanner *et al.* 1987). It is unfortunate that the weakness of this framework tends to detract from the important perceptual elements of skilled practice identified in the findings of McMurray's study.

Luker and Kenrick (1992) carried out an exploratory study of the sources of knowledge that guide community nurses' decision-making. This is an important project because of its careful examination of practice. Significantly Luker and Kenrick identify the absence of distinction between the scientific and experiential knowledge used by the nurses. Many of their decisions were based upon 'gut' feelings, with little rational deliberation. Furthermore, experience and situational factors were repeatedly offered as rationales for decisions of a 'technical' nature.

These authors offer a plausible explanation for the lack of differentiation between scientific and experiential knowledge during decision-making in practice. They conclude that scientific knowledge had been absorbed, rearranged and later recognised by nurses as 'experience'. This explanation suggests that attempting to study research-based and practical forms of knowledge separately may *not* reflect the development of nurses' knowledge as it occurs in practice. Thus Luker and Kenrick offer a significant and alternative interpretation to much of the pre-existing literature which describes clinical knowledge as that which grows predominantly through practice (Benner and Wrubel 1982; Benner 1984). Whilst Luker and Kenrick's study does not offer any differentiation between the nurses' levels, it offers insight into the development of nursing knowledge and is therefore useful to studies of nursing expertise.

In 1993 Orme and Maggs conducted a small qualitative study of how expert nurses, midwives and health visitors make decisions in practice. The sample included twelve practitioners and a focus group interview approach was used. Orme and Maggs's findings incorporate the group's exploration of clinical decisions, identified processes at work and their attempts to illuminate the factors which make up the decision-making process. Analysis of the group's discussion of the characteristics of an expert decision maker identified the importance of nurse and patient's intuition on how they feel when collecting information prior to reaching a decision. The group felt that it was not possible to quantify intuitive judgement since this would make intuition a rational process.

The group determined that the expert practitioner held a pre-existing knowledge base which made intuition useful in the skilful interpretation of a clinical situation. The participants also noted that 'gut' feelings were often present in students and newly qualified nurses. They felt that nurses should be encouraged to voice their feelings while deepening their knowledge base to develop a synthesised approach to decision-making. These findings offer further evidence of the importance of intuition within the clinical judgements of nurses at varying levels of expertise. However, the study is limited by a lack of clarity in relation to the sample criteria. This concern throws doubt on the accuracy of the representation in this single focus group of twelve and therefore the transferability of the findings to other expert nurses in practice is thrown into doubt.

STUDIES EXPLORING BEGINNER TO EXPERT PRACTICE BASED ON BENNER'S MODEL

A further study in 1993 explored how nurses learn in clinical practice (Logan and Boss 1993). These researchers investigated how a nurse proceeds from one stage of skill acquisition to another. They utilised the Dreyfus and Dreyfus (1980) model in combination with Benner's (1984) seven domains of nursing practice to frame the analysis of their study. The researchers chose a sample of eight nurses, two at 'advanced beginner', two at 'competent', two at 'proficient' and two at 'expert' level from a volunteer group within a specialised surgical ward. They classified the nurses' levels of expertise based on years of experience and recommendations made by the nurse managers and staff. Informal interviews were tape-recorded and transcribed for analysis.

The findings show a pattern of learning which fits within and between Benner's domains. The nurses' learning focused on the development of technical and relationship skills, with the former taking precedence over the latter in the nurses' early stages of skill acquisition. Logan and Boss assert that each of the domains require both types of skills. The relationship skills in each domain were noted to develop around patients and families, doctors and other nurses. Three relationship themes appeared from the data analysis, namely, trust, advocacy and peer mentoring.

Logan and Boss claim that nurses at the 'advanced beginner' level identified technical procedures and basic care as tasks to be accomplished before completion of the shift. Further, they assert that progression occurred when nurses moved away from the focus of task completion by set times and began to concentrate on the patient's needs. Nurses at the competent level were able to plan care for the entire day and had begun to think about long-term goals by looking at the patients with more of an overall view.

Logan and Boss describe 'competent' nurses as making considerable progress in skill acquisition across the domains involved in the helping role, the teaching or coaching function and the diagnostic and monitoring function. They also assert that the interested and committed competent nurses demonstrated a burgeoning intuitive ability to recognise deterioration in a patient's condition. Proficient and expert nurses were found to perform with superior skill in the domains of diagnostic and monitoring functions and effective management of rapidly changing situations. Logan and Boss note

that nurses at these levels have increased self-confidence in providing effective nursing care and acting as advocates for patients.

This study offers several findings which are very important to the understanding of nurses' judgement at different levels of expertise. Overall they tend to support the Dreyfus and Dreyfus model and Benner's seven domains of practice. Interestingly, the nurses' need to master technical skills first may relate to the levels of detachment found by Benner in advanced beginner and competent stages of practice. Like Dreyfus and Dreyfus, Benner and Schraeder and Fischer (1987) Logan and Boss identify a similar relationship between nurses' commitment and engagement with patients in care and intuitive judgement in practice.

However, Logan and Boss note nurses achieve intuitive elements of understanding of patients' situations much earlier in development than these earlier authors. Limitations of this study lie in the use of the work of Dreyfus and Dreyfus and Benner to direct the sampling selection of the nurses and as a framework for the analysis. There is a risk that important differences may have been lost through steadfastly following this pre-existing schema for skill acquisition in nurses' practice.

In 1994 Guyton-Simmons and Ehrmin conducted a small qualitative study to identify and describe the practical knowledge of six expert intensive care nurses in the management of acute post-operative pain. Guyton-Simmons and Ehrmin applied Benner's (1984) criteria of expert selection by peer recommendation in a rather unique way. Seventeen nurses with a minimum of two years of critical care experience were included in a ballot and voted on by nurses with at least one year of experience in critical care. The six highest polling 'expert' nurses had spent over five years in critical care nursing and had a variety of diploma, associate and baccalaureate degree qualifications.

These nurses believed they were being observed and interviewed regarding how they assessed and managed pain rather than for their expert practice. This covert approach to the study of skilled care appeared to be of a rather dubious nature from an ethical point of view. Significantly, Guyton-Simmons and Ehrmin identified few overt behaviours which could be interpreted as expert practice. By contrast, the transcribed interview data offered rich insights into the thinking behind expert practice.

Analysis showed these nurses' completed routine monitoring and searches simultaneously. They expected a pattern for a given surgery, post-operative day and individual's response. If the patient's pain was judged atypical, compared with others, the nurses' assessments changed to an explanatory search. Similarly, if the patient's pattern changed unexpectedly the amount and type of assessment data sought by the nurse also altered. Thus Guyton-Simmons and Ehrmin assert that expert nurses change their assessment approach according to the patients' situation.

The content and amount of information assessed also altered depending on the judgement of the nurse. The experts' were able to obtain the most information in the shortest possible time, often from very limited questioning. This study supports growing evidence that expert nurses make judgements on an individual basis against a background of knowledge of patients with similar problems and circumstances. However, the study is limited by potential bias of peers choosing the expert group, and further research is needed to confirm its transferability to other aspects of expert practice.

Walters (1994) conducted an interpretive Heidiggerian phenomenological study of eight expert intensive care nurses' practice. The sample was based on the nurses' roles as clinical nurse specialists, identification by peers as experts, a qualification in ITU nursing, and/or more than four years of ITU nursing experience. The nurses were observed and interviewed in their practice and the findings thematically analysed according to Benner's research design.

Rather broad themes were generated which included 'being busy' - that is, performing complex technical skills in a holistic manner, and 'comforting,' which incorporated relief of pain and anxiety, communicating effectively and using technology to make the patient feel comfortable. The theme of 'focusing' involved nurses in concentrating their energies on the critically ill patient and empathising with the patient and family. 'Balancing' involved bridging the gap between the objective dimensions of technology and the 'humanistic' qualities of caring.

Ontological qualities were also identified including 'being-in-the-world,' which incorporated the nurses' involvement in their world and the commonality of their experiences with other people. 'Being-with-the-technology' involved the nurses' ability to use technology as part of the

creative process of caring. Finally, 'being-in-the-world-of-the-patient' described the nurses' ability to share the experience with the critically ill patient, family and friends.

The importance of the relationship between self and other, the technological skills and effective care-giving support the ontological and epistemological elements of expert nursing knowledge identified in earlier literature (Silva *et al.* 1995; Carper 1978; Jacobs-Kramer and Chinn 1988). This form of engaged, skilful and caring practice is also supported by Polanyi (1958) and Benner's (1984) work. This study, is however, limited by the sampling approach, for although the criteria are more complex than previous studies they may not represent experts in practice.

In 1995 Polge conducted a study which mixed quantitative and qualitative methods to examine the relationship between the use of intuition in clinical judgement and characteristics of the nurse. Nurses were asked to make qualitative distinctions about their judgements and levels of practice. Benner's (1984) model was then used to investigate the relevance of years of clinical experience to their levels of expertise. The computer-randomised sample included five hundred critical care nurses. One hundred and seventy-nine nurses responded, giving a thirty-seven per cent return rate for the study.

The postal survey involved a case study and questionnaire to determine the self-reported level of nursing proficiency of participants according to Benner's model, a demographic questionnaire and the Rew Intuitive Judgement Scale (Polge 1995: 6). The case study described a post-operative patient with symptoms of a pulmonary embolism. The nurses chose one statement from five which best described the way they would make clinical judgements in the situation. The statements were based on Benner's description of the characteristics and thought processes of nurses at the five levels of expertise. Benner's category names were not used and the statements were listed in a random fashion.

Analysis of the findings involved the use of three non-parametric tests which demonstrated only four levels of nurses' expertise, instead of the five described in Benner's (1984) model. The findings also showed the use of intuition increased with each level culminating in the experts' intuitive judgement. Polge also noted that the nurses' applied intuitive understanding

gained from experience to enlarge and enhance the analytical nursing process. These findings are particularly interesting as these nurses' appear to be experiencing intuition at levels much lower than Benner's description of the experts' intuitive judgements.

A positive association was also demonstrated between minimum years of clinical experience and nurses' levels of expertise. The 'advanced beginners' had at least one year, 'competent' nurses had at least three years, 'proficient' nurses had more than four years and the 'experts' had greater than six years of critical care experience. However, this did not mean that all nurses' with a set number of years would function at a specific level of practice, for example some nurses were experts after six years while others were at the competent stage following thirty years within the critical care field. Polge argues that at least a minimum amount of time learning in practice is required before nurses can progress to a higher level of expertise. She concludes that the progression to the expert level is not automatic or necessarily maintained.

The relationship between the nurses' use of intuition, years of experience and levels of expertise were interesting findings within this study. Polge suggests that there is a correlation between the nurses' years of experience and use of intuition and their level of expertise and use of intuition. This is confusing as it was clearly established that years of experience did not necessarily identify the nurses' level of expertise in the study. Therefore it seems contradictory for intuition to increase according to the nurses' levels of expertise and yet also increase over years spent in practice. Of further interest is the discrepancy between Polge and Benner's findings. These differences cast doubt on the use of criteria which relates set periods of time in practice to a level of expertise. Overall the study offers interesting findings, but the low response rate is a disappointing limitation.

BENNER, TANNER AND CHESLA'S (1996) REVISION OF THE BENNER MODEL OF NURSING EXPERTISE

Benner *et al.* (1996) sought to explicate the Benner adaptation of the Dreyfus and Dreyfus (1980) model further, with particular attention to expert critical care nursing practice. A phenomenological study was conducted involving one hundred and thirty graduate nurses who practised in the intensive care units of eight hospitals. Nurses were selected to 'advanced beginner',

'competent', 'proficient' and 'expert' groups according to years of experience and peer nominations. The groups were divided thus: twenty-five nurses with less than one year, thirty-five with greater than two and less than five years experience, twenty-six with greater than five years experience, identified as experienced safe practitioners and forty-four with greater than five years of experience and recognised as experts.

Data collection involved the nurses in individual practice-based narratives and interviews followed by a series of small group interviews. Forty-eight nurses were then observed on three occasions during patient care. The nurses' conversations during observation periods and interviews were audio taped and analysed, initially using the Ethnograph computer programme. As the themes emerged, sections of text were retrieved for in-depth interpretation in relation to the Dreyfus and Dreyfus model and Benner's (1984) domains.

The findings of this study substantiate and extend Benner's earlier adaptation of the Dreyfus and Dreyfus model to nursing. Three concepts drawn from the work of Dewey (1925) and Taylor (1985), namely, experience, knowledge and agency, were used to describe the nurses' acquisition of skill. Nurses at different stages were described as living in different clinical worlds where they noticed and responded to very different cues for action. The nurses' sense of agency, set by their clinical world, provided an increasing feeling of responsibility toward patients under their care. Central to Benner *et al.'s* (1992, 1996) views was the belief that experiential learning tied to emotional responses altered nurses' judgements, perceptions and distinctions in advanced practice. The four levels of practice identified by Benner *et al.* are described below.

THE ADVANCED BEGINNER GROUP

Further additions to the characteristics described in the earlier Benner model involved the advanced beginner's clinical world as an anxious entry into the clinical situations. Situations presented themselves to the nurses as a set of tasks that must be accomplished and the need to document the patient records. The nurses sought to recognise the clinical signs and symptoms of the patients but were guided by standards of care, unit procedures and nurses' and physicians' orders. The nurses relied upon these protocols regardless of the instability of the patient's status. The researchers assert that the demands of clinical situations are often beyond the beginner nurses' judgement ability,

causing anxiety about their capacity to provide an adequate standard of care. In response, the advanced beginners took their concerns about patients to more experienced clinicians to gather their judgement of the patient's situation.

THE COMPETENT NURSE GROUP

Benner *et al.* claim that competent nurses demonstrate greater organisational ability and technical skills, which allow for greater focus on managing the patient's condition. These nurses have a deeper understanding of the typical progressions in patients' illnesses and recovery through experiential learning of the signs and symptoms as they occur in real life. They begin to recognise and accept differences between standardised and individualised care. The nurses' clinical world is focused upon the near future and thus planning for and anticipating likely events in the patient's situation. Competent nurses also seek a more extensive understanding through clinical learning and study. Benner *et al.* conclude that these nurses' emotions had begun to function as a screening or alerting process to what was happening to the patient.

Clinical agency appears to be directly related to what the competent nurses could plan, predict and control in their delivery of nursing care. These nurses are reported to be orderly, organised and analytical in their work requiring less direction from experienced staff. Benner *et al.* reiterate Benner's earlier conclusion that, because of this tendency, competent performance is rewarded and encouraged by institutional management. The researchers state that the nurses' sense of agency is at times a source of reflection and conflict. They report a heightened sense of responsibility and lack of trust in the adequacy of scientific knowledge and in colleagues' practice. These nurses are described as critically self-reflective and having strong feelings about patient care. Competent nurses also appear uncomfortable when unable to identify all possible options and consequences when making judgements in patient care.

THE PROFICIENT NURSE GROUP

Benner *et al.* maintain that the clinical world of the proficient nurse is transformed in a number of major ways from that of the competent nurse. These nurses are said to recognise the changing relevance of aspects of the situation, and to experience a socialised sense of agency. They have begun to develop engaged reasoning, emotional attunement, and have increased skills of involvement with patients and families. These nurses are reported to have a

qualitatively different way of 'being' in the clinical situation, accompanied by an increased perceptual acuity and responsiveness to trends and meanings in the patient's situation. These skills are interpreted as being based on experiential learning and are described as dramatically altering their clinical performance.

Benner *et al.* report that the proficient nurses' sense of agency is shaped by knowing what facets of care can be prioritised through learned experience. Meaningful trends and patterns emerge as the nurses' experience an increased ability to understand particular situations. They no longer feel anxious about leaving out aspects of routine care because they have more confidence in their ability to notice important aspects of the patients' situation. These new perceptual skills and 'ways-of-being' in the situation increase their ability to be flexible and act in a situation without direction. The researchers note that the proficient nurses' narratives frequently involve sudden unexpected changes which occur in aspects of the patients' situation. Benner *et al.* maintain that proficient nurses recognise changes in pattern, but cannot always 'see' the most appropriate response and utilise analytical problem solving to decide what to do.

THE EXPERT NURSE GROUP

Benner *et al.* describe expert nurses as having an immediate, different, more comprehensive and correct grasp of familiar and uneventful patient situations than other clinicians. Important aspects of the situation stand out as salient, while less important aspects remain in the background of the nurses' attention. The researchers conclude that experts experience pattern recognition and 'know' they had a correct understanding of the patient's status. These nurses guide others to comprehend the patients situation based on confidence in their clinical judgement and ability to make a case for a different treatment plan. The researchers argue that expert practice is characterised by increased intuitive links between seeing the salient issues in the patient's situation and ways of responding to them. Practice is characterised by engaged practical reasoning which relies on mature, practical understanding and a perceptual grasp of distinctions and commonalities in patient situations.

ISSUES ARISING FROM THE STUDY

The researchers demonstrate firm adherence to years of experience and peer recognition as sampling criteria for specific levels of expertise. This is

surprising, as there is a paucity of literature to support their use in the identification of different levels of nurses' practice. The data collection technique continues to be open to criticism because of the reliance on nurses' memory to provide retrospective accounts of practice. Observation and exploration of actual incidents appears to offer a more credible base from which to gain a comprehensive picture of the nurses' practice. However, the data collection and analysis process are described in far more detail than Benner's earlier work, and offer a clearer audit trail as a result.

The four levels of practice described in Benner *et al.'s* model are particularly significant as they have dropped the novice level depicted in the earlier model. This is an interesting adjustment, as four levels are also demonstrated in the findings of Logan and Boss (1993) and Polge's (1995) research. The description of Benner *et al.'s* model is also thought-provoking as there is an absence of any reference to the four aspects of changing performance which underpinned the earlier model (Dreyfus and Dreyfus 1980, 1986). Instead, experience, knowledge and agency are identified as the concepts which underpin the current model. This model is strengthened by the inclusion of examplars from the data to provide an effective audit trail within the study.

CHAPTER SUMMARY

A number of issues emerge from this review of interpretive studies which have explored nursing expertise. The importance of using qualitative methods appears particularly significant to investigations within this field. Different forms of nursing knowledge become visible in these studies through their use of observation, individual and small group interviews which focus upon actual incidents from the nurses' practice. However, Benner's 'critical incident technique' remains open to criticism because of the possibility of restricted memory of events. It appears both plausible and desirable to supplement the narratives of the nurses with concurrent observation of these events as they occur in practice.

The strength of Benner's method lies in the comprehensive descriptions that are elicited which offer the opportunity to explore the differences between nurses with different levels of skill and knowledge. Emotions, intuitive and experiential knowledge are richly displayed in comparison with the restrained

responses obtained when traditional research techniques such as simulation are used in cognitive studies of clinical reasoning.
The findings of these studies fuel the debate on the nature of the decision-making process and the differences between expert and non-expert nursing judgement. Until recently understanding of clinical judgement and its relationship to nursing expertise has been dependent upon clinical reasoning models from cognitive psychology for explanation. Studies built on Benner's work offer considerable evidence that much remains to be learnt about the nature of the knowledge that informs effective judgement in practice (Brykczynski 1989; Logan and Boss 1993; Polge 1995).

A number of studies have cast further doubt on theories that assume clinical judgement is a purely rational calculation irrespective of the individual's level of expertise (Gordon 1986; Etheredge 1989; Logan and Boss 1993; Polge 1995; Benner *et al.* 1996). Benner *et al.'s* work also questions the correctness of seeking a purely 'scientific' base to clinical judgement and over-emphasis of the importance of theoretical knowledge to skilled practice. By contrast, a rapidly growing body of research has shown that other patterns of knowledge are also involved within skilled nurses' decision-making (Brykczynski 1989; Cahill 1991; McMurray 1992; Luker and Kenrick 1992; Orme and Maggs 1993).

A further issue arising from these studies is the difficulty in setting clear sampling criteria for levels of nurses' practice. This is particularly pertinent in relation to years of experience and the educational background of the nurses. The development of nurses' expertise is described in terms of a combination of theoretical and experiential knowledge (Benner 1984). Whilst longevity in practice is not offered as the essential element of developing expertise, a relationship is noticeable between years of experience and the nurses' advancing levels of practice (Benner *et al.* 1996). Interestingly, Polge (1995) notes a discrepancy between his findings and Benner's (1984) in regard to years of practice and level of expertise. It is clear that the relationship between theoretical knowledge and clinical experience in the development of expertise demands further research.

Several studies provide support for elements of Benner's (1984) five stage model of expertise and extend her domains of nursing (Brykczynski 1989; Logan and Boss 1993). However, there is also strong evidence that

motivation, receptivity and self-confidence accompany theoretical knowledge and experience in the development of advanced practice (McMurray 1992). Benner *et al.* (1996) offer a significant change with their four level model, which recognises that nurses with over five years of experience may not be expert practitioners. Additionally, Benner *et al.* believe that the nurses' clinical world and sense of agency appear important to decision-making. Intuitive judgement as an aspect of expert practice is also supported within this updated model of nursing expertise. Further studies are required to establish the applicability of Benner *et al.'s* four levels of practice to other nurse groups.

There is growing evidence that when optimal nursing practice is defined on the basis of empirical knowledge it becomes difficult to differentiate between competent and proficient/expert level of practice. Indeed, the skills and levels of proficent and expert practice do not appear to be easily identified within 'competencies,' as the creative dimensions of nursing knowledge seem to disappear under empirical measures (Gordon 1986). The studies reviewed offer qualitative distinctions between nurses' practice at different levels. However, there is a need for further investigation as to how these distinctions can be translated into appropriate recognition for nurses who provide advanced levels of clinical practice.

The research of Benner and her colleagues (1984, 1996) has guided many of the studies which explore the influences of intuitive feelings, knowledge, reflection on previous experiences, their relationships with patients and recognition of patterns on nurses decision-making at different levels of practice. In particular, exploration of the relationship between analytical and intuitive processes in the decision-making of nurses at varying levels of expertise is of considerable importance. In addition, Luker and Kenrick (1992) offer an interesting explanation for the apparent absorption of scientific knowledge, intuitive feelings and situational factors into a rationale of 'experience' underpinning nurses' decision-making. However, further research is needed into the use of intuition in non-expert and expert nurses' decision-making. Therefore the next chapter will examine the studies which explore nurses' use of intuition in practice.

CHAPTER FOUR:
UNDERSTANDING EXPERTISE: INTERPRETIVE STUDIES OF NURSES' USE OF INTUITION

INTRODUCTION

This chapter reviews the literature which explores the concept of intuition in clinical judgement and decision-making and its relationship to nursing expertise from the interpretive paradigms of critical social theory and constructivism. Intuition is explored because it emerged as a key discriminator in the judgements made by novice and expert nurses in major studies examined in Chapter Three (Benner 1984; Benner *et al.* 1996).

Bastick (1982) describes the phenomena of intuition as 'a universal characteristic of human thought,' and he notes that 'creativity begins with intuition [which] is then shaped by reason' (Bastick 1982: 2). Rew's analysis of the concept of intuition identifies three attributes: 'knowledge is received as a whole; awareness of knowledge is immediate; and knowledge is not acquired through analytical reasoning.' Further, she claims that intuition must be 'validated through analytical reasoning' (Rew 1986: 27).

In the following pages, interpretive studies which explore intuition in nursing practice are reviewed in chronological order. It proved difficult to categorise these studies as they overlap in several dimensions. A very general clustering can be found in the early studies of intuition in critical care nursing and the relationship of intuition to nurses' awareness of patients unique signs during decision-making. This section is followed by studies which explore expert nurses' use of intuition and the role of intuition in problem-solving and/or the nursing process in practice. Research which investigates student nurse experiences of intuition is also included. The final group of studies focus on the investigation of the use of intuition in community nursing practice. Insights gained from the analysis of these studies which increase understanding of the role of intuition in nurses' clinical judgements at different levels of expertise are highlighted.

STUDIES OF NURSES' USE OF INTUITION IN PRACTICE

In 1983 Pyles and Stern carried out a small-scale study to establish the assessment and decision-making processes that critical care nurses use to

determine if a patient is developing cardiogenic shock. Twenty-eight critical care nurses participated and a grounded theory approach was taken. Pyles and Stern summarise their findings as a 'Nursing Gestalt' which informs the nurses' decisions of the likelihood (or not) of a patient progressing into cardiogenic shock. The matrix is a synthesis of the nurses' knowledge base, derived from study and past experiences, patient cues, patients' intuition and their own gut feelings.

Pyles and Stern indicate that the critical care nurses differ in their ability to observe and interpret subtle clinical signs in the patients. The nurses describe knowledge gained from experience as the key ingredient to skilled assessment of patients status. Pyles and Stern claim that the nurses' intuitive or 'gut' feelings are based more on experience of past patient cases and recognition of patients falling out of the recognised 'normal' pattern than overt clinical cues. Pyles and Stern also describe the nurses' recognition of 'intuitive knowing' as an integral element of comprehensive and effective patient care. However, they highlight the difficulty nurses have in communicating these intuitive feelings to medical staff, who 'devalue' this form of clinical judgement.

This important study was one of the first to focus on nurses' perceptions of different aspects of decision-making during a familiar phenomena from their practice. The importance of intuition, along with theoretical knowledge, learning through experience, and pattern recognition in the nurses' identification of impending cardiogenic shock, is a significant finding. The apparent absence of analytical thinking as part of the nurses' decision-making processes is also of particular importance. Further, Pyles and Stern claim that there are some variations between the nurses in terms of their ability to identify subtle changes in the patients and their use of intuition in practice. Unfortunately, little can be concluded from these vague assertions due to the absence of clear distinctions between the nurses' levels of expertise.

Schraeder and Fischer (1986) analysed the use of intuitive knowledge in the clinical decision-making of expert maternal and child nurses. These researchers draw strongly on the work of Jung (1933) and Schraeder and Fischer (1984) to identify that intuition is an important form of knowing which is not in opposition to analytical thought. They describe intuition as the ability to grasp an understanding of a situation as a whole, and to reach a decision without conscious use of rules and with very little measurable data. Schraeder

and Fischer point out that expert nurses who perceive subtle cues in patients' situations and listen to their own intuitive feelings express confidence in their mastery of clinical practice. These researchers stress that the professional use of intuition is characteristic of the expert nurse and is a valuable form of knowing.

Schraeder and Fischer conclude that acknowledging expert nurses' use a diversity of ways of knowing in no way belittles logic or scientific patterns of thought, but simply confirms that understanding is made more complete by the inclusion of intuition. Their review of the literature on intuition gives additional support to the growing evidence that other forms of knowing, as well as empirical knowledge, are involved within expert nurse performance. These researchers point out the need for more research into the development of intuitive thinking and its use in practice. More investigations are clearly required to examine the role of experience and intuition in nurses' decision-making at all levels of practice.

Schraeder and Fischer (1987) carried out an ethnographic study to describe the experiences, process and outcomes that occurred when Intensive Care nurses responded to their feelings and assessments that infants didn't 'look right'. The focus of the study was on intuitive perception, which was defined as the immediate knowing of something without the conscious use of reason. The participants included the head nurse, a medical director and fifteen staff nurses who worked in a neonate unit. The purposive sample included staff nurses ranging from one to seven years of experience in neonatal intensive care nursing.

The researchers spent twelve months in the research field involved in interviews, participant observation and the examination of primary documents. The tape-recorded interviews and research field notes were then transcribed and analysed for emergent themes. Schraeder and Fischer claim that intuitive knowledge emerged as a powerful theme from which clinical judgements were derived and nursing actions were initiated in response to the anticipation of sudden and extreme deterioration in the infants' physical status.

Schraeder and Fischer present four factors which influenced the nurses' intuitive thinking. The first factor incorporated the characteristics of the nurses, for it was those who had technical skills, in-depth knowledge and

wide experience who used intuitive knowledge in their decision-making. The second factor involved feelings of 'relatedness,' which incorporated feelings of love, impending loss and happiness in caring for babies the nurses had come to know. These nurses practised an informal form of primary nursing, believing that regular involvement enhanced their care of the infants. This form of 'knowing' appeared to be connected to the nurses' ability to perceive changes in the infants' 'cues' which initiated a sense of when the children were not quite 'right'.

The third factor, to influence decision-making, Schraeder and Fischer claim, was the nurses' ability to perceive qualitative distinctions in the individual infant's cues (e.g. colour or activity level). These clinical cues were physiologically based but not easily quantified for analytical consideration. The nurses, through 'knowing' the babies, were able to perceive individualised cues and then make judgements about the relevance of these cues. The fourth, and most telling factor, was the nurses' ability to link perceptions with past similar situations, 'a kind of deja-vu based on having previously experienced events of a similar nature' (Schraeder and Fischer 1987: 49). The nurses were able to use that knowledge to anticipate the likely trajectory of the child's situation and to provide direction for immediate action.

Schraeder and Fischer summarise their findings as 'using intuitive knowledge which involves drawing on experience; experiencing feelings of knowing the infant; sensing subtle, qualitative changes; and linking perceptions from the past with an anticipated future and taking action' (Schraeder and Fischer 1987: 49). These researchers also note that, in this particular neonatal unit, nursing judgements based on 'a feeling' by experienced nurses were respected, but acting on them was not without an element of risk. Schraeder and Fischer maintain that whilst these nurses clearly experienced intuitive feelings, they felt very cautious about sharing them with colleagues, especially medical staff. Significantly, most persisted in using their intuitive knowledge despite the perceived sanctions against non-linear reasoning.

The findings of this study provide more evidence of factors such as feelings of connectedness between nurse and patient, heightened awareness of a patient's unique clinical signs, experience of similar cases, and in-depth physiological knowledge in the 'intuitive knowing' of nurses. Unfortunately, lack of differentiation between the nurses prevents any conclusions being drawn in

relation to nurses' use of intuition at different levels of practice. However, this study does raise the possibility that nurses may begin developing intuitive thinking in decision-making before achieving expert practice. The very narrow focus of neonatal intensive care nurses working on one unit means that additional research is needed to explore the judgement of nurses in other fields of care.

In 1987 Gerrity carried out a survey of the perceptions and clinical judgements of a group of nurses. A quantitative approach was taken to explore intuition, sensing and emotions in nurses'decision-making processes. Three thousand, one hundred and three nurses completed a psychometric questionnaire, the Myers-Briggs Type Indicator (Briggs and Myers 1976), over a five year period. This instrument is based on Jung's (1933) theory of mental activity, which holds that each person has a preferred perceiving function, either sensing or intuition, and a preferred judgement process which involves thinking or feeling. The questionnaire attempts to determine personality types by identifying what the person focuses on in any given situation and how the person draws conclusions from their perceptions.

The findings indicate that over half of the nurses identified 'sensing' as their preferred way of perceiving. Only one fifth of the nurses' identified intuition as their dominant function. Gerrity asserts that 'sensing' nurses need to learn how to cultivate their intuitive abilities so that, when used, these abilities can be trusted. However, an alternative explanation for the results is that the nurses responded to the questionnaire in a cautious fashion, knowing that intuitive approaches to practice are traditionally devalued. Gerrity concludes that nursing education has emphasised sensory ability at the expense of intuitive perception, and argues that 'in nursing the sole emphasis on nursing process has caused nurses to discard much intuitive data that are of essential importance in expert nursing care' (Gerrity 1987: 69).

Gerrity claims that as nursing pursued a scientific base from the 1960s the dominant mode of thinking became 'analytical and linear' with the devaluing of intuitive understanding of a situation. She asserts that nursing education follows the step-by-step approach of the nursing process without recognising that it is but one tool for use in practice. Further Gerrity claims that 'intuitive' nurses were made to feel 'out of place' because their ways of dealing with information was not in keeping with the nursing process which underpinned

nursing education. Gerrity argues that 'this needs to be corrected and the scope of learning opened up to include intuition' (Gerrity 1987: 69).

She suggests that intuition had not been studied in-depth previously because it 'did not fit easily into the nursing process,' and that nursing had only recently become aware of other elements of problem-solving through the work of Pyles and Stern, Schraeder and Fischer and Benner (Gerrity 1987: 69). She draws on the findings of these studies, in particular Benner's description of expert practice, to argue that non-linear aspects of intuitive judgement can, and indeed must, be incorporated into nursing education.

Gerrity urges the inclusion of more situational and case study approaches in nursing education, and the discovery of innovative methods of teaching and learning which are in keeping with those used by expert nurses in practice. Also, Gerrity states that nurses should begin to describe intuition in terms of 'operational and functional knowledge'. How this should occur through nursing education is, however, not made clear. Nonetheless, Gerrity's commentary remains pertinent as there appears to be little evidence of recognition being given to intuitive aspects of nurses decision-making within nursing education in the 1990s.

Also in 1987 Young conducted an exploratory study using a grounded theory approach to determine the place of clinical intuition in the nursing 'diagnostic' process. Forty-one nurses from a variety of clinical areas and agencies were observed in action and asked to describe intuitive experiences recalled from their practice. The data were coded into two dimensions, personal and functional, which reflected the discrete but overlapping components of the intuitive 'diagnostic' process. The functional dimension was made up of two components, the judgement process and a qualitative scale for evaluating the amount of intuition. Each component was coded into cues, knowledge or action (as a consequence) and validity or correctness of the decision.

Young claims that intuition is involved in the nurses' judgements as both a process and a product. Analysis of the information provides evidence of the intangible and enigmatic cues that the nurses used in practice. Most of the intuitive incidents were found to contain a feeling cue or to be based solely on the nurse's feeling. Analysis of the cues on the intuitive knowledge scale reveals that most of the intuitive incidents were subjective (no recall of

objective, verifiable data) and involved feeling cues. Young maintains that the judgement phase embodies clinical intuition which follows the processing of information by the nurse about the patient.

Young identifies no clear pattern in relation to the type of action taken by the nurses or the presenting cues that triggered the action. However, the knowledge of the nurses produced a definite decision which was frequently reported to occur simultaneously with action. The validity phase of the judgement process confirmed the correctness of the action and thus gave credence to the usefulness of the cues. Almost all of the incidents incorporated an intuitive component in the decision, and over half of the incidents involved no objective data. Data was available in many of the incidents to validate the judgement process and, of the known results, almost every decision was correct. However, Young notes that there is 'no compelling evidence in the literature or in this field study to suggest that intuitive decisions are more valid than objective, rational decisions' (Young 1987: 58).

Young argues that clinical intuition, in the personal dimension, is a form of personal knowing involving 'giving of self' which could bridge all four of Carper's (1978) patterns of knowledge, depending on the situation. Young notes that attributes which facilitated the nurses' intuitive judgements include recent and direct 'patient contact', 'self-receptivity', 'experience', 'energy' and 'self-confidence'. The nurses discussed intuition as involving recent 'patient contact', consideration of clinical signs and symptoms and requiring decision-making. In addition, the nurses who Young rated as highly intuitive reflected on the potential usefulness of their feelings before making a judgement for action in practice. Young concludes that it was these reflective skills which were essential to improvement in the nurses' decision-making skills.

'Self-receptivity' was described as being implicit in the nurses' descriptions and strongly visible in the narratives of nurses rated as highly intuitive. Self-receptivity involved the nurses being open to receiving information from the patient. 'Experience' from previous nurse-patient relationships emerged as the basis of the nurses' intuition. The ability to reflect on and evaluate these previous decisions was perceived to improve the nurses' intuitive judgements. Young points out that this skill may be discriminatory, as nurses who are highly intuitive 'have greater skill because they consciously engaged in

evaluative activities' (Young 1987: 60). The nurses' 'energy' emerged as responses such as feeling tense, alert or 'Adrenalin-like rushes', which influenced their ability to perceive, integrate and act on the cues. Finally, 'self-confidence' referred to the nurses' confidence in the validity of their intuitive judgements.

The findings of this study add to the growing evidence that both intuitive and conscious analytical thinking are involved in nurses' decision-making in practice. It also offers extra support for studies which have identified the importance of knowledge, experience and feelings to nurses' intuitive judgements. Acknowledgement of the importance of these different forms of knowing appears vital to gain a true understanding of skilled nursing practice. Young makes no attempt to examine the relationship between nurses' intuitive judgements and increasing clinical expertise. However, there appears to be a strong possibility that the sample involved nurses at a variety of levels, which suggests that non-experts as well as experts may be experiencing intuitive and analytical thinking during practice.

Agan (1987) carried out a study which explored how seven nurses, recognised as holistic in their practice, yet with diverse educational, practice and personal backgrounds, perceived holistic nursing. The nurses were interviewed and the 'researcher-as-instrument' kept notes which were transcribed. Agan considered four perspectives within the study. First, the characteristics of the nurses. Secondly, one special experience from each nurse's life and an example from each nurse's practice. The third perspective compared the views and experiences of two nurses' views and experiences with very different backgrounds and the fourth involved a description of emerging themes. These themes focused on a critique of the 'bio-medical industry' in which the nurses' practised, feelings of responsibility in terms of patients' health and healing, the connection between nurse and patient or with a healing or spiritual source, and finally a non-linear intuitive form of knowing.

These four perspectives were not, however, fully described in the findings. Instead, Agan focuses specifically on the intuitive form of knowing involving both interpersonal and universal/spiritual connection. Agan argues that visual representation and awareness of the patients' energy are important subconscious data which inform the nurses' decision-making. Agan suggests this incorporates a 'collective consciousness, a connection with a whole, and

the nature of a field' (Agan 1987: 68). Agan concludes that intuitive knowing is a dimension of personal knowledge (Carper 1978) which nurses grow to value and use through personal reflection and the response of others.

This study provides fresh evidence of the importance of personal involvement, relating to the patient, self awareness and ability to reflect to nurses' intuitive judgement. It is interesting to note that there is little evidence of linear analytical thinking in the nurses descriptions of their perceptions and thoughts during 'holistic' practice. Agan asserts that 'as nurses reflect on intuitive knowing, they will individually and collectively come to know its value and usefulness' (Agan 1987: 70). However, in terms of levels of expertise, Agan offers little information about the backgrounds of the participants beyond their ages. It is therefore difficult to compare Agan's findings with other studies of experts' use of intuition in decision-making, though it does raise the possibility that non-expert nurses may use intuitive judgement.

Benner and Tanner (1987) conducted a pilot study using an ethnographic approach to identify the nature and role of intuition in expert clinical judgement. The same sampling approach and methology as Benner's (1984) earlier study (described in depth in Chapter Three) was used. The purposive sample consisted of twenty-one expert nurses, each of whom had at least five years of experience in a single clinical area and were identified by their peers as experts. The nurses were interviewed several times and observed in their practice. Discussion revolved around detailed narrative accounts of critical incidents in which these nurses felt they had made a difference to the patients' 'outcomes'.

Benner and Tanner claim that analysis revealed examples of Dreyfus and Dreyfus's (1980, 1986) six key aspects of intuitive judgement. They assert that the nurses demonstrated 'pattern recognition,' or the ability to recognise and make sense of the components of a patient's situation as a whole. 'Similarity recognition' involved the nurses' ability to recognise subtle likenesses to cues found in past episodes, despite differences in the current situation. The third aspect, 'common-sense understanding,' included the nurses' ability to 'grasp an understanding of the patients' illness experiences from their cultural and personal perspectives' (Benner and Tanner 1987: 25).

Benner and Tanner describe the fourth aspect, 'skilled know-how,' as incorporating experiential knowledge in which the 'tools' of a practical situation become an extension of one's physical being in action. The fifth aspect involved nurses' 'sense of salience,' or ability to identify and relate to salient cues within a clinical situation. The sixth aspect included 'deliberative rationality', the expert nurse's ability to reflect on past experiences to offer alternative views of current situations. Each of these aspects of intuitive judgement is made credible by the inclusion of examplars from the data of the study.

A recurrent theme, that of the devaluing of intuitive judgements by experts, other nurses and medical staff, emerged from the study. Benner and Tanner claim that this occurred because intuitive aspects of judgement were perceived to be based on background understanding and skilled clinical observation. Decisions made on the basis of assessment guidelines, by contrast, were more valued because they followed accepted linear analytical processes. Benner and Tanner acknowledge the usefulness of these processes for beginners, but argue that continued use of standard guidelines limits the development of flexibility, a characteristic of proficient and expert levels of performance.

Benner and Tanner conclude that information processing and decision theories are not particularly useful in describing the judgements of expert clinicians. In addition, these authors dispute the view that traditional analytical thinking and intuition are in opposition. Benner and Tanner's conclusions also support earlier research which suggests that analytical and intuitive thinking can and do occur in an inter-connected way.

However, a limitation of Benner and Tanner's study is the use of retrospective accounts of clinical episodes. The possibility of incomplete recall is a serious impairment to the study. Further, the criteria for selection of the expert group remain unproved, which suggests that the conclusions drawn may not be consistent with experts in other fields of nursing practice. The possibility therefore remains that some non-experts may have been participants and experienced intuitive, as well as analytical, thoughts during clinical judgements in practice.

In 1988 Smith undertook an exploratory study to identify and characterise the phenomenon of 'deterioration' among critically ill patients. The six

purposively selected critical care nurses had at least two years of experience in critical care and ranged from associate degree level to doctoral student level in educational preparation. The nurses were interviewed regarding their personal practice-based experience with the phenomena of deterioration and asked to rate eighteen possible characteristics of deterioration on a one (most essential) to three (not a part of the phenomenon) scale. The interviews were transcribed and significant 'descriptors and themes' were identified.

Smith describes interwoven aspects of the phenomenon which incorporate an 'initial period of stability,' 'subjective certainty', 'non-specific felt changes', 'reliance on gut feelings', 'search for confirming evidence', 'gradual pattern recognition', 'sudden onset of crisis situation', 'difficulty communicating with physicians', 'intervening factors', 'importance of context', 'preventative role of the nurse', 'sense of involvement with the spiritual realm' and 'ethical decision-making'. The four characteristics of deterioration considered most essential by the nurses were the 'sense that something about the patient was wrong', 'the nurse's feelings of concern', 'the sense that something was changing about the patient' and the 'overall feeling that the nurse got about the patient'.

Smith identifies other high ranking characteristics, including the nurses' sense that there was a disrupted order about the patient and a need to be able to see the patient to note the phenomenon. The majority of the objective cues in the patient, such as changes in skin colour, texture and heart rate, were rated as not essential but frequently present. The areas of congruence amongst the nurses included an 'initial sense that something about a patient was wrong', 'an awareness of change toward deterioration', 'instability or crisis in a patient's status' and the 'need for the nurse to see or be with a patient to be able to watch for the phenomenon'.

The nurses' awareness of change in an individual before the identification of particular clinical cues is an intriguing phenomenon. Smith notes that 'the detection of deterioration involves a powerful, complicated cluster of intellectual, affective, perceptive and, later, empirical physiological indicators operating in interactive exchange between a patient and nurse' (Smith 1988: 14). In particular, the nurse's emotional and perceptual responses appear to trigger an analytical search for measurable signs of deterioration in the patients. These findings are remarkably congruent with previous studies which have identified the importance of intuitive awareness and conscious

reasoning within the decision-making process (Benner and Tanner 1987). Further, the results of this study suggest that intuition may be used by experienced nurses who are not necessarily 'experts' in their field.

In 1989 Gruber and Benner described a patient care situation in which Gruber (an expert gastro-intestinal nurse) experienced intuitive awareness that 'something was not right' with a patient following a colonoscopy. Benner maintains Gruber's intuitive knowledge as recognition of early changes in the pattern of recovery which denotes a serious change in the patient's condition. This 'examplar' gives evidence of excellent judgement by the nurse which produces an early intervention before severe deterioration in the patient can occur. Such 'examplars', where intuitive recognition prompts successful early intervention, demonstrate that skilled nurses do not ignore or dismiss incongruous differences between patients' symptoms and objective measurements. These findings appear to support Benner's (1984) assertions that intuitive understanding in general and pattern recognition in particular are essential components of expert nursing practice.

Rew and Barrow (1987) undertook a review of American nursing literature which highlighted a scholarly neglect of research into the intuitive process in the professional development of nurses. Rew and Barrow were surprised by this absence, particularly as their review showed that ethical dilemmas, expert practice and the ability to identify likely outcomes based on limited data required the use of intuitive knowledge.

Building on this review, Rew (1988) designed a study of intuition as a component of decision-making in nursing practice. She sought to discover if nurses experienced intuition in the nursing process, and if so, what responses followed these intuitive episodes. Fifty-six interested nurses were recruited from five home health agencies, five hospital critical care units and a university student health centre. Interviews were completed, transcribed and analysed for emergent themes using the computer software programme Ethnograph. The nurses' descriptions were grouped into three 'types of intuition' which included 'cognitive inference,' a rapid unconscious processing of cues, 'gestalt intuition,' completion of a pattern of data within a context that made sense to the nurse and 'precognitive function,' perceiving a change before it happens (Rew 1988: 152).

Rew claims the nurses experienced intuition as 'immediate knowing' a patient would improve or deteriorate or a planned intervention would be successful. Also, as an immediate perception of the kind of person someone was, empathy with a patient's intuition about their own health and the nurses' own sense of the patients' prognosis. Rew maintains that the majority of the nurses used these forms of intuition covertly during various steps of the nursing process although not all of the time. Rew found the nurses had three major reactions to experiences of intuition which were categorised as 'affective' (e.g. feeling scared, contented or sorry if they ignore the feelings), 'cognitive' (e.g. reflecting on the experience, planning how to respond) and four different 'behavioural' responses.

Rew describes these 'behavioural' responses as four actions taken by the nurses as 'consequences of intuitive experiences' (Rew 1988: 153). The first behavioural response includes the nurses' search 'to gather additional data'. Second, their endeavour to 'validate' the intuitive feelings through discussion with other nurses. Third, 'reporting the findings' and feelings to the patient's doctor and fourth completing specific interventions on behalf of the patients, such as preparing emergency equipment and medications. Rew concludes that these findings provide evidence that nurses recognised intuition as a valuable component of decision-making and as the basis for taking action in nursing.

Whilst this study offers little to inform understanding of the differences between novice and expert nurses it does add to the overall understanding of the role of intuition in nurses' decision-making. An important relationship can also be observed between nurses' intuitive awareness, emotional and physiological responses and their use of analytical thinking. Rew's study, unlike Gerrity's (1987), suggests that intuitive knowledge continues to be used while the nurses overtly follow the steps of the nursing process in their practice. This finding provokes further debate about the interwoven nature of the relationship between intuitive recognition and linear problem-solving within nursing practice.

Carroll (1988) carried out a study to consider the function of nurses' 'tacit knowledge' in problem-solving within the clinical setting. Carroll's clinical focus was on the likelihood of patients contracting pressure sores in five public hospitals. The research design was somewhat vague, but it is possible to identify that questionnaires were completed by nurses caring for thirteen

patients who had, or developed, pressure sores in the medical/surgical wards during one particular week. The Norton Scale (Norton 1975) was used as the measurable checklist which accompanied the nurses' decision-making questionnaire.

The results were submitted to statistical analysis and, unlike the nurses' decision-making, when rated using the Norton Scale the patients at risk of pressure sores were not identified. Carroll argues this was because the scale did not measure the type of information that underpins nurses' tacit knowledge of why patients are at risk of developing a pressure sore. Carroll concludes that clinicians should be cautious in their use of mechanistic problem-solving procedures, and that their tacit knowledge about a situation should be expressed and represented in the decision process. Further, Carroll states that clinicians should continue to expand their knowledge base to promote decisions which are a blend of 'theoretical' and 'tacit' knowledge. She supports a model which depicts the importance of nurses' perceptions and tacit knowledge within the decision-making process.

This study is limited by the lack of clarity in relation to the professional backgrounds of the participants. However, it can be assumed that these nurses are likely to have a mixed range of education and experience. If this is the case, then these findings would once again support the possibility that intuition may be experienced by nurses who are not experts in their fields. Moreover, this study, like Benner and Tanner's, also highlights the limited capacity of formal clinical reasoning models to accommodate the intuitive elements of nurses' decision-making.

Rew and Barrow (1989) conducted a review of the literature surrounding the concept of intuition in nursing practice. They conclude that intuition is an essential component of the decision-making nursing process. These researchers also claim that the literature challenges the belief that the nursing process is the only mode of thinking which guides nursing practice. Rew and Barrow claim that research findings provide evidence that 'systematic assessment, diagnosis, planning, implementation and evaluation address only part of the process that the nurse uses' (Rew and Barrow 1989: 358). Moreover, they maintain,that nurses apply personal and intuitive knowledge gained from experience and, as they apply the formal nursing process, they experience sensations and thoughts that enrich the analytical approach. Rew

and Barrow suggest nurses then follow a more reflective method which includes being open to incomplete and unclear data, and validating the intuitive feelings against objective data as it becomes available.

Rew and Barrow's conclusions are complemented by Rew's (1989) phenomenological description of the narrative of a psychiatric nurse in premature labour. This woman, in her first pregnancy and expecting twins, provided an example of connections between intuition, nursing knowledge and an individual's spiritual dimension. The nurse intuitively knew that her babies would be born safely, a view not shared by the professionals present at the time. The affirmation of the correctness of her intuitive judgement as a 'patient' increased the nurse's responsiveness to her own intuition as a professional and recognition of other 'patients' intuition about their own health.

Rew includes a second narrative taken from patient care involving a critical care nurse's intuitive concern for a patient's condition which was later found to be an accurate judgement of the situation. The nurse described intuitive recognition of a change about to happen from the total 'look of the patient'. This recognition was perceived to be related to previous events that the nurse had experienced and had recognised in the current situation, before it was objectively demonstrated in deterioration of the patient's status.

Rew concludes that intuition, as a way of knowing, in the absence of objective data, is evidence of a spiritual dimension and the 'connections' that are forged between individuals. These 'examplars' provide similar findings to previous studies in relation to the perception of change, without measurable evidence, based on knowledge gained from experience informing understanding of the current situation. There is also evidence of a relationship between intuitive awareness and the analytical search for objective data to validate the nurse's judgement. However, a limitation of these 'examplars' is that the background of these nurses is not made clear. Once again, this absence of detail makes it difficult to draw any conclusions about the nurses level of expertise and their use of intuition in decision-making.

Rew (1990) conducted a study which investigated critical care nurses' experiences of intuitive episodes. She was particularly interested in the nurses' experiences of intuition during the steps of the nursing process and the feelings and physical sensations they associated with experiences of intuition

in clinical practice. Her sample included twenty five interested nurses from five hospital critical care units. Structured interviews and field notes were transcribed, coded using Ethnograph and analysed for themes. Rew found that each nurse was able to clearly describe intuitive experiences in her clinical practice.

Rew notes that these nurses experienced intuition in practice as a form of knowing, gut feeling, sixth sense, perception and/or ability to anticipate. Also, she maintains that the nurses were aware of intuition at the same time as they utilised the steps of the nursing process. Rew also claims the participants associated the experience of intuition with feelings about their patients, the future and themselves as nurses. Further, Rew maintains that the nurses associated physiological sensations with these experiences of intuition e.g. dry mouth, flushed skin, tightened muscles and increased pulse.

The forging of nurse/patient relationships and the nurses' emotional and physiological responses to intuitive awareness of change are consistent features with previous studies. A further consistency involves the nurses' analytical search for supportive data to validate their intuitive judgement. These findings provide more evidence of the need for a comparative study of nurses' experiences of intuition with different educational backgrounds and experiences in nursing.

In 1993 McCormack undertook a study examining student nurses' accounts of intuitive incidents in their practice. The convenience sample included ten pre-registration students who were asked to keep a diary of their practice for three weeks. The diaries were then analysed using the Young (1987) intuitive judgement scale. The categories and topics which arose from the analysis informed subsequent focus group interviews with the students. A framework for analysis of the interview data was formulated from the defining attributes of intuition identified by McCormack in 1992.

McCormack maintains that the students could broadly define what they meant by the term intuition by using terms such as 'gut feelings' and 'instinct.' McCormack claims the students identified the sudden nature of intuitive knowledge and it was that initial perception which encouraged them to investigate 'something' in more detail. McCormack asserts that the students recognised that when they thought intuitively it was usually about 'patients

they had come to know very well'. McCormack also notes that the students experienced difficulty in describing intuitive thoughts through the nursing process. This finding appears to support Gerrity's argument that this linear and mechanistic process does not allow any expression of nurses' intuitive knowledge. It also supports Rew's findings that intuition does occur, albeit covertly, at the same time as nurses utilise the step-by-step approach of the nursing process. These findings offer firm support for those earlier studies which suggest that intuition has a part to play within the decision-making processes of nurses across the continuum of expertise.

In 1993 Appleton undertook an exploration of how health visitors identify and work with vulnerable families. The method incorporated a two stage approach which included a postal survey of 102 health visitors (with a response rate of just over half) followed by in-depth qualitative interviews with twelve of the participants. Analysis of the interview data identified six key inter-relating factors which reflect the steps which the health visitors went through in the assessment process of identifying vulnerable families. One of the six factors was termed 'health visitor's gut feeling/instinct'.

Appleton's identification of this finding is important as Wheeler (1992) had previously found the use of intuition in health visitors' family assessments, and Luker and Kenrick (1992) had also noted the use of 'gut' feelings in community nurses' decision-making. Appleton's (1993) study indicates that a number of health visitors, while admitting to experiencing and using gut feelings in decision-making, were concerned that they should not be, because it was difficult to articulate and give rationales for doing so during practice. This study highlights the devaluing of intuitive judgement in favour of linear analytical processes which underpin assessment tools and guidelines in practice. The health visitors also represent an undifferentiated group and so foster the possibility that intuition is used by nurses who may not be experts in this particular field of community practice.

CHAPTER SUMMARY

These studies provide recent and growing insight into the nature of nurses' intuitive judgement as a perceptual act which is both process and product of their unconscious thought processes (Young 1987). Evidence points to those moments of sudden 'nursing gestalt' as the synthesis of theoretical knowledge,

reflection on past experiences, patients' cues and gut feelings (Pyles and Stern 1983; Schraeder and Fischer 1987). Thus knowledge and feelings appear to be closely linked, resulting in the ability of nurses to make judgements and anticipate the likely outcomes of patients' situations.

Nurses in these studies illustrate an ability to interpret the salience of clinical cues gained through limited information and a capacity to recognise when patients' clinical signs alter from an expected pattern for their current situation. Yet the nurses' awareness of the patients situation is experienced and understood as a whole (Pyles and Stern 1983; Schraeder and Fischer 1986; 1987; Benner and Tanner 1987; Rew 1988; Smith 1988; Gruber and Benner 1989).

This heightened level of awareness is experienced by nurses following regular involvement with and feelings of engagement in a patients' care. They describe valuing the patients feelings and empathising with them (Schraeder and Fischer 1986; 1987; Benner and Tanner 1987; Young 1987). These elements of intuition appear to be closely related to Carper's (1978) description of 'personal knowing'. The nurses illustrate how they 'listen' to their own feelings and have confidence in their abilities to make accurate judgements. Some nurses also describe a heightened sense of universal as well as individual 'connectedness' in patient care (Agan 1987; Smith 1988, Rew 1989).

This research provides support for the importance of intuitive feelings by suggesting that perceptual ability is vital to the provision of comprehensive nursing care (Pyles and Stern 1983; Schraeder and Fischer 1986; 1987; Young 1987). The nurses describe how they actively responded to covert intuitive awareness at any of the assessment, planning, implementation and evaluation stages of patient care. They identify difficulties experienced in voicing intuition within this formal analytical process (Gerrity 1987; Rew 1988, 1990; McCormack 1993). Yet these aspects of intuitive knowing appear to occur in tandem with rather than in opposition to analytical modes of clinical reasoning (Benner and Tanner 1987; Rew 1988, 1990).

It is important to note the common features consistently found in intuitive experiences of judgement which include affective, physical, cognitive and behavioural elements. The cognitive and behavioural elements appear to be

closely related to conscious responses which pre-empt the nurses' actions in patient care. Juxtaposed against the nurses' use of intuition is their wariness in sharing these judgements with other nurses and medical staff. The dominance of the bio-medical model appears to cause devaluing of the intuitive elements of the nurses' judgements. As a result of this domination, nurses feel forced to be covert in their use of non-analytical thought processes during practice (Pyles and Stern 1983; Schraeder and Fischer 1987; Gerrity 1987; Benner and Tanner 1987; Appleton 1993).

Unfortunately, a number of the studies did not identify the level at which the nurses practised, and at best state their years of practice and educational background. The range in the nurses' backgrounds suggests that aspects of intuitive judgement may exist in the thinking of students, newly qualified and experienced non-expert nurses (Schraeder and Fischer 1987; Smith 1988; Rew 1990; McCormack 1993). These findings are of considerable significance, since Benner and her colleagues (1984, 1992, 1996) have made a strong case for the belief that intuitive judgement lies in the domain of the expert nurse (see Chapter Three). Studies which demonstrate expert nurses' use of intuitive knowledge in decision-making support this view (Pyles and Stern 1983; Schraeder and Fischer 1986, 1987; Benner and Tanner 1987). These rather conflicting points of view suggest that much remains to be understood of nurses' decision-making in general, and the role of intuition in particular, at different levels of expertise.

CHAPTER FIVE:
METHODS

INTRODUCTION

This chapter provides a comprehensive overview of the methods employed within this study. It incorporates the aims and objectives of the study, the research design, and the choices made for sampling and sites for the research. Techniques utilised within the research design are discussed in relation to issues of rigour and robustness. Ethical considerations of clinical research in the context of access to the hospitals, wards, patients and nurses, and the research techniques used within the study are explored. A description of the pilot work is followed by a detailed explication of the main data collection process and the analysis techniques utilised within the study.

AIM AND OBJECTIVES OF THE STUDY

The aim and objectives of the research study were as follows:

OVERALL AIM: To conduct a study to explore and identify the levels of nursing expertise found through focus on a practice event - that of the nurses' post-operative assessment of patients returning from major surgery.

OBJECTIVES:

1. To observe and analyse the approach used by nurses during the initial post-operative assessment of patients returning from major surgery.

2. To develop an interviewing method through which nurses are able to articulate the approach used in the post-operative patient assessment by reflecting on their practice.

3. To identify indicators of nursing expertise through analysis of the nurses' reflections on their assessments of the patients returning from theatre.

4. To explore influences on the development of the nurses' expertise through reflection on the nurses' practice.

5. To explore nurses' understanding and use of intuition in the context of their practice.

6. To compare the indicative levels of nursing expertise gathered through the nurses' reflections on these practice events with a model of nursing expertise (Benner 1984; Benner *et al.* 1996).

CHOICE OF RESEARCH APPROACH

The choice of method used in this study was influenced by the exploratory, descriptive nature of the research area. Little is known of the ways in which nurses, at differing levels of expertise, make sense of the information they gather to reach an understanding of patients health status and needs.

The focus of this study therefore required a broad research approach which would facilitate an understanding of the post-operative assessment process from the nurse's point of view. A predominantly qualitative approach was chosen as its characteristics best suited the aims and objectives of the research study.

CHARACTERISTICS OF QUALITATIVE RESEARCH

Three basic characteristics of qualitative research provide the rationale for the dominance of this approach within the study. These features include the emic perspective, the holistic perspective and the use of an inductive and interactive process of inquiry (Morse 1992).

The emic perspective

The emic perspective focuses on the participants' point of view, identifying their beliefs and values which underpin the phenomenon and refraining from imposing the researcher's beliefs and theoretical perspectives (etic perspective) on the data (Morse 1992). It is the participants views that are paramount to this study. An approach was required which provided the nurses with a forum for expression of their perceptions of how they have amassed their knowledge and utilised it in the assessment of their patients following surgery. This approach needed to focus on the participants, within the context of their lived experience, using observation of their nursing activity and discussion of their perceptions through in-depth interviews.

Context is used within this study as meaning the:

> inclusion of the health care professional's purposive, systematic, and analytical interaction with a situation or event in order to discover meaning in totality and to understand the whole of that situation or event. Prediction, explanation, and understanding can result from this use of context.
> (Hinds *et al.* 1992: 33)

The holistic perspective

The holistic perspective offers an approach which considers and includes underlying values and the context as a part of the phenomena under study. This perspective is not found in a purely quantitative approach that utilises context-stripping techniques to remove potentially contaminating variables from research studies (Morse 1992). The context of the nurse's post-operative assessment of the patient formed a fundamental component of this study. Removed from the context of real practice, the nurse's assessment of a post-operative patient would become a simulated exercise in decision-making. It has been suggested, convincingly in the researcher's view, that such research produces quite different responses from those nurses make in real-life nursing practice (Padrick 1990).

Inductive and Interactive Process of Research Inquiry

A further characteristic of qualitative research that is central to this study is the use of an 'inductive and interactive process of research inquiry' (Morse 1992). This enables the researcher to proceed with the process of analysis as he or she gains understanding and insight about the phenomena under study. This can be compared with the deductive approach found in classic quantitative research, in which a predetermined conceptual framework is used and which may include the testing of hypotheses. Results of such studies are not known until data collection is complete and the data has been analysed (Morse 1992). Inductive and interactive processes were required as the gathering and analysis of the qualitative data continued throughout this study.

CHOICE OF RESEARCH DESIGN

An open and interactive research design was required to gather an understanding of the steps taken by nurses during the post-operative assessment process. The research techniques required to gather this information resulted in an approach that was unique and that did not sit readily

within the boundaries of labelled traditions often described within qualitative research. The research design employs techniques of sampling, observation and semi-structured 'interactive interview' to elicit qualitative data (Morse 1992). Techniques of 'naturalistic inquiry' have informed the approach to data analysis and the issue of rigour which establish the trustworthiness of the study (Lincoln and Guba 1985).

DATA COLLECTION TECHNIQUES

A variety of data collection techniques were considered for use in this study. These included the 'verbal protocol technique' of concurrent reporting of the event (Ericsson and Simon 1984; Jones 1989) and the retrospective reporting of the clinical or critical incident technique (Benner 1984; Flanagan 1954).

Concurrent self-reporting by the nurse during the activity was considered as an alternative technique. This form of self-report would require the nurse to use a verbal protocol technique taken from research which was based in simulated settings (Ericsson and Simon 1984; Jones 1989). The nurse would be asked to 'think out loud' and describe her thoughts as she put them into action during the event. Concurrent reporting is held by some authors to be a more reliable and valid technique than retrospective reporting in simulated research (Ericsson and Simon 1984). However, concurrent reporting when considered for application to the clinical setting of real life practice was not chosen as it was deemed an unacceptable distraction to the nurse during the process of administering care to the acutely ill patient.

The technique of retrospective self reporting of critical clinical incidents was also considered for the study (Benner 1984; Flanagan 1954). This technique rest on the nurse's ability to recall events that have occurred in past experiences of their practice without the events having necessarily been observed through the presence of the researcher as observer. Padrick (1990), in her study of nurse's decision-making, suggests there may be substantial differences between the thoughts and activities that are used by nurses in events of actual practice and those described in interviews. Therefore it was decided to combine techniques to complement the nurses' retrospective reporting with the researcher's observation of the event. Utilisation of the combined techniques of observation and self-report offered an opportunity to study an event in each nurse's clinical practice that could be confirmed and

reflected upon within an interview closely following the event. The nurse's post-operative assessment of the patient would be fresh in her mind and offer a recent and 'everyday' event on which to focus to recall and reflect on her nursing practice.

OBSERVATION

Direct observation was seen as vital to this study. The use of observation as a research technique 'allows the researcher to see the world as her participants see it, to live in their time frames, to capture the phenomenon in and on its own terms, and to grasp the culture in its own natural, ongoing environment' (Guba and Lincoln 1981: 193). Field and Morse (1985) describe four types of participant observation available to a researcher in the context of a field setting.

The present researcher chose the approach referred to as 'observer-as-participant' as the more active forms of participant observation were deemed unacceptable on ethical grounds. The primary aim of the observation was to cause as little alteration as possible to the situation while gathering accurate, detailed descriptions of the setting. It was considered unacceptable to ask questions of the nurses during an intense event of nursing practice. The patients would be in need of the nurses constant attention and care, and distraction caused by the researcher participating in the activity may have placed the patients at risk during this critical period of care.

The observer-as-participant technique enabled the researcher to be completely overt in her activities as an observer of nursing practice. However, there were several potential difficulties with this form of observation which required consideration prior to use within the study. Observation by the researcher could affect the behaviour of the nurse within the activity (Field and Morse 1985). The nurse may alter her activity due to the influence of being observed by the researcher. Alternatively, the nurse may act in a less effective manner during the activity due to the 'strangeness' of being watched by another person. Both are possible responses by participants, described as the 'Hawthorn effect' (Roesthisberger and Dickenson 1939).

Observing in this manner provided the researcher with the opportunity to interact with the staff, patients and their loved ones during regular visits to the wards. The researcher was well known and accepted within the nurses culture

because of her clinical background in the practice of caring for surgical patients. However, the researcher, through being known to the nurse, the patient, other staff and relatives of the patient could, by her very presence, act as a distraction during the episodes of care.

The potential influences of the researcher's presence as an observer were minimised through the application of the following approaches within the study. The researcher interacted minimally with the patients and others present at the time of the event. This interaction was kept to friendly, informal and very brief conversations during the event, allowing the researcher's concentration to remain with the observation and taking of field notes of the nurses activities in her assessment of the patient.

The researcher made every effort to minimise the possibilities of change in the nurses' behaviours and activities during the study. The aim of the observation, to note the sequence of activities that each nurse took in the assessment of their patients, was described in detail. The researcher endeavoured to make the nurses comfortable with her presence by clarifying that observation was used to note the activity process and not to make a judgement about the assessment of the patient. The researcher also endeavoured to remain in the background of the activity by observing and writing field notes in a quiet corner, while activities occurred in front of her during the events of nursing care under study (Field and Morse 1985).

The researcher chose to observe the actual events of practice in preference to the use of retrospective reporting of previous and unobserved post-operative assessments of patients. This ensured that the assessments the nurses had just undertaken were fresh in their minds and offered a recent everyday event on which to focus and reflect on practice. It is emphasised that the purpose of the observation of these events was to verify that the participants' description of the episodes during the interviews concurred with the researcher's observations at the time of the assessments. That is to say, the nurses were describing the recent episode of patient care that had been observed by the researcher. The field notes were therefore collected not as behavioural data for analysis but rather to confirm the sequence of actions described in the nurse's narratives. As such these observation notes were rarely used as prompts to questions asked of the nurses during the interviews. Indeed, over the course of the study it became clear that there was no need to use the

observation data to prompt the nurses' memories. Each of the nurses provided accurate and detailed accounts of the observed episodes from their practice. Examples of the researcher's field notes of an event from both an ITU and a surgical ward nurse's practice are included (Appendix i).

INTERACTIVE INTERVIEWS

From Unstructured to Semi-structured Interviews

The data collection techniques of unstructured or semi-structured interviews are typically utilised to obtain the participants' view within qualitative studies. The nature of this study required development of an interview schedule from the exploratory and pilot interviews. Initially, the exploratory work entailed the use of relatively unstructured interviews to elicit understanding of the salient issues from participants within the study.

Traditionalists consider unstructured interviews as those which do not reflect pre-conceived ideas about content and flow and are undertaken with little or no organisation (Polit and Hungler 1987). However, qualitative researchers understand unstructured interviews to be informed by the investigators' previous knowledge, observations, and experience, which are subordinated to the participant's perceptions of the situation (Morse 1991a). The goal becomes the discovery and understanding of the 'participant's perspective' on that particular aspect of his or her life (May 1991).

Polit and Hungler maintain that semi-structured interviews are made up of a schedule of questions organised around areas of particular interest, while still allowing for flexibility in scope and depth. May (1991) takes a rather different view and claims that the semi-structuring of interviews arises from analysis of the early participants' stories. In keeping with May's description, a semi-structured interview schedule was developed from the analysis of the early interviews. The developmental exploratory and pilot stages of asking questions, analysing and forming new questions which shaped the interview schedule for utilisation throughout the main study are described in the following section.

EXPLORATORY INTERVIEW SCHEDULE

Exploratory questions were developed for two specific reasons. First, there was no previous research from which questions could be drawn to inform an interview schedule. Secondly, reason was the administration and ethics

committees approached for access to the hospitals required an outline interview schedule before permission would be granted for the research to proceed in their wards. Therefore the initial exploratory interview questions were developed by the researcher in conjunction with expert nurse informants from the surgical nursing arena (Appendix ii). The questions were broad in subject and open in nature and designed to facilitate the participants' description of the salient issues in the area under research.

Pilot study

The pilot stage of the study involved two nurses working in Intensive Care and three nurses working in general surgical wards who agreed to assist with the development of the interview schedule and participate in the study. The input of the nurses' knowledge, observations and previous experience of assessing patients post-operatively was instrumental in the development of the interview schedule. The involvement of the five nurses is detailed in the following section.

Interview 1:

The first nurse had participated in the discussion of the interview questions at the exploratory stage and agreed to pilot the method in the context of her nursing practice. The nurse was observed as she made an assessment of a patient returning from Cardio-thoracic surgery. The nurse and researcher then carried out a tape-recorded interview which covered the assessment and the questions framed in the exploratory stage. The researcher analysed the interview for major categories, with the aim of developing questions which would elicit the information sought from the nurses within the study. Questions were altered and developed in response to the areas highlighted during the interview. The researcher and nurse then discussed and agreed on the revised schedule for the next interview.

Interview 2:

The revised questions were used during the interview with the second participant in the pilot study. The nurse was observed as she made an assessment of a patient returning from Cardio-thoracic surgery and was then interviewed. The researcher again analysed the interview for major categories and more questions were developed in response to the areas highlighted in the interview. The analysis of the first and second interviews gave further shape to the questions included within the next interview.

Interviews 3, 4 and 5:

The third, fourth and fifth nurses were observed as they made assessments of patients returning from major abdominal surgery and were then interviewed using the revised interview schedule. The researcher again analysed interviews for major categories and found the questions in the interview addressed the salient areas identified by the participants.

The Development of the Interactive Interview

The development of the questions used in the interviews was progressive and grew from the researcher's and nurses' understanding of the important areas which emerged in the early stages of the exploratory and pilot work. The questions were shaped by the analysis of the participants' interview responses and the interview schedule gradually evolved for use in the main study. The researcher approached the first interviews in the pilot study very much as May (1991) describes:

> It is true that investigators begin with largely unstructured interviews exerting only as much topic guidance as is necessary in the interview to elicit the informant's story. Since the salient parameters of the topic cannot be identified until several informants' stories are heard and analysis begins, active topic guidance or control early in the investigation is counterproductive. Thus early interviews may look more like 'guided conversations' (Schatzman & Strauss 1973) and may be appropriately called interactive interviews. (May 1991: 192)

The interviews thus became steadily more focused as the researcher explored the areas of interest that arose from the analysis of each interview and began to look for areas of commonalty and difference in participants' stories in the pilot study. The movement from unstructured conversations at the beginning of the pilot study to the semi-structured interview schedule of the main study is best described in the following way:

> The distinction that some researchers make between "unstructured" and "focused or semi-structured" interviews within qualitative research has more to do with when in the process the interview takes place. Interviews that take place early in the study are more likely to be guided largely by the particular perspective of the informant being interviewed (unstructured interview) while later in the study questions are likely to be suggested from preliminary findings generated to that point in the project (semi-structured or focused interview). (May 1991: 192)

A semi-structured interview schedule was thus developed following analysis of the first five nurse interviews (Appendix iii). The interview schedule was then utilised as a basis for all of the nurses interviewed within the main study.

Tape Recording Of the Interviews

Audio tape-recording of all of the interviews was performed for several reasons. First, to produce verbatim reproductions of the participants' responses for qualitative data analysis of their contents. Secondly, audio-taping of the complete data set allows 'auditability' of the data collection procedures (May 1991). Therefore the interviews were tape-recorded using a portable Sony cassette recorder with a built-in flat microphone. The cassette tapes utilised gave ninety minutes of recording time which allowed for one or two interviews per cassette tape. The use of a second cassette tape was required for two interviews due to their extended length.

The tape recorder, after a check of the recording mechanism and volume, was placed near the participant. Recording of the interview occurred using the following approach. The researcher and participant were seated in a quiet room near to each other during the interview. The tape recorder was turned on when the participant was ready to commence and turned off on completion of the interview.

Tape recording of interviews has been known to cause 'stage fright' in participants of previous studies (Field and Morse 1985). Strategies were therefore developed to prevent the participants from feeling uncomfortable during the tape recording of the interviews. The reason for tape recording was discussed early in the conversations between researcher and nurse before agreeing to participate within the study. The importance of tape recording the interviews for analysis of the data and the rigour of the research method was explained to every nurse approached to participate within the study. The nurses were then able to accept and prepare for the presence of the tape recorder at the interview. Informal conversation preceded the interview to allow the participant time to become comfortable with the room, the researcher and the presence of the tape recorder during the interview. The participants became noticeably more comfortable with the intrusion of the tape recorder using this approach, and no nurses asked to have the tape recorder turned off during the interviews.

ESTABLISHING THE TRUSTWORTHINESS OR RIGOUR WITHIN THE STUDY

There have been many criticisms of qualitative research levelled predominantly at the scientific adequacy of the method. Qualitative methods 'are frequently viewed as failing to achieve or to make explicit rules for achieving reliability, validity and objectivity - criteria of adequacy or rigour in scientific research' (Sandelowski 1986: 27). 'Establishing the trustworthiness' or rigour of the study must therefore be made overt in order to address these concerns (Lincoln and Guba 1985). Lincoln and Guba suggest that posing the following four questions tests the rigour of a research study:

1. The truth value: How can one establish confidence in the 'truth' of the findings of a particular inquiry for the participants and the context in which the inquiry was carried out?

2. Applicability: How can one determine the extent to which the findings of a particular inquiry have applicability in other contexts or with other participants?

3. Consistency: How can one determine whether the findings of an inquiry would be repeated if the inquiry were replicated with the same (or similar) participants in the same (or similar) context?

4. Neutrality: How can one establish the degree to which the findings of an inquiry are determined by the participants and conditions of the inquiry and not by the biases, motivations, interests, or perspectives of the researcher?

These four questions have been used to establish rigour within any research study. Criteria of rigour for research within the positivist paradigm are termed 'internal validity', 'external validity', 'reliability' and 'objectivity'. These conventional terms have been found to be 'inappropriate criteria for qualitative research and an alternative approach to establishing the trustworthiness of the study has been found through the criteria of credibility, transferability, dependability, and confirmability' (Lincoln and Guba 1985: 300). It is these criteria of rigour that are used to identify the robustness of this qualitative study. It is necessary then to describe each of the criteria and to clarify the researcher's use of these principles to establish the trustworthiness of the study.

TRUTH VALUE: ESTABLISHING CREDIBILITY RATHER THAN INTERNAL VALIDITY

In order to demonstrate 'truth value' the researcher must show that he or she has given credible representation to the multiple constructions presented by the participants through the reconstructions found within the findings and interpretations of the study (Lincoln and Guba 1985). These authors suggest several activities to increase the probability of the production of creditable findings, which include a 'prolonged period of engagement', 'persistent observation' and 'member checking' within the field of study.

Prolonged engagement

'Prolonged engagement' requires sufficient time to be spent within the research field for learning about the 'culture', for testing of findings for distortions by the researcher or participants and for building trust (Lincoln and Guba 1985). Persistent observation is suggested in tandem with prolonged engagement as a means to identify salient points and important atypical occurrences during the inquiry. These activities are believed to be enhanced by a balanced researcher-participant relationship within the study (Sandelowski 1986).

The researcher was involved in a prolonged period of engagement with the participants of the study to establish knowledge of the nursing culture and test for misinformation which could result from too short an interval of time within the area or too little contact with staff of the units. Field work was carried out on the wards over a period of fifteen months. The time spent in each of the six wards or units overlapped and varied, for example, Ward 1: six months, Ward 2: ten months, Ward 3: seven months, Ward 4: four months, Ward 5: two months, and Ward 6: two months.

The length of time spent on each ward depended on several factors. The number and frequency of patients scheduled for major surgery was an important issue which affected the opportunity to observe nurses in this area of their practice. The number of nurses in the staff mix on each of the wards also had a major impact on the study. Reduced numbers of nurses on several wards meant they were unable to leave their areas to go to Recovery to accept the patient into their care. Enrolled and student nurses who were not involved in the study were given this duty while the Registered Nurse managed the ward. This time was used to get to know the nurses and develop a knowledge

of each of the wards in preparation for opportunities later in the study when the Registered Nurses were caring for patients returning from major surgery.

The long period of time spent on the wards gave the researcher ample opportunity to test information gained through analysis of early field notes and interviews with participants. The researcher sought to observe and interview a number of nurses at varying levels of expertise who were caring for patients in surgical wards and Intensive Care units to reduce the risk of personal distortion from the researcher or participants which could occur if only one specific surgical ward or one group of nurses was involved in the study.

The researcher became known to many of the nursing staff during that time through regular contact in person or by telephone. Daily monitoring was required to check for the arrival of patients awaiting theatre and to meet nurses not yet involved in the research. However, the researcher was only present for a maximum of four hours on any ward on any day, and did not participate within the ward activities on any occasion. The researcher was thus a known outsider with whom the nurses could converse in a confidential fashion. This ongoing relationship was seen as enhancing the likelihood of the participants allowing the researcher access to their private experiences of the situation within the study.

Persistent observation

'Persistent observation' is used by researchers to 'identify those characteristics and elements in the situation that are most relevant to the problem or issue being pursued and focusing on them in detail' (Lincoln and Guba 1985: 304). It is important to come to terms with the things that really count within the situation -issues of salience - along with atypical happenings which may have importance. This is done by 'tentative labelling of the salient factors' of the situation which are then explored in ongoing and detailed analysis which challenges or confirms the initial evaluation (Lincoln and Guba 1985).

The attempt to determine the depth of knowledge of the nurses' experiences required the researcher to carry out ongoing analysis following each and every nurse observation and interview within the study. The field notes taken of the nurses' activities and interviews following the event were scrutinised for both salient and atypical happenings which could shed light on the patterns emerging within the study.

Member checking

Lincoln and Guba (1985) describe 'member checking' as an important element of credibility. Other authors agree that 'member checking' provides credibility by giving stakeholders the opportunity 'to test categories, interpretations and conclusions' (Erlandson *et al.* 1993: 142). Lincoln and Guba assert that one of the major ways, this is achieved is to check understanding and interpretation of the participants' responses during or at the end of interviews. This technique was used so that any confusion over the meaning of comments could be queried by the researcher with the participants during the interview. A clear understanding could therefore be gained from each participant during the original data collection and any ambiguity clarified at that point in time.

A further component of 'member checking' requires the researcher to send copies of the findings to a review panel of participants from within the study (Lincoln and Guba 1985). However, Sandelowski (1993) argues that returning later to 'member check' is not useful, as people seek to identify only their own viewpoint and not the consensus of opinion. They may also have moved on in their thinking from the time of data collection. Sandelowski further suggests that the results should be presented to groups of individuals in similar contextual situations. If the results match other groups' experiences then the study findings are considered meaningful.

In keeping with Sandelowski's direction, the findings of this study have been presented to similar groups of Intensive Care and surgical ward nurses through informal and interactive seminars. These seminars have taken place in both Australia and England, and the findings were found to be credible and meaningful to these nurses.

In summary, the 'truth value' of a study is maintained through the credibility provided by activities which ensure faithful representation of the descriptions and interpretations of the participants' experiences within the study. The participants should then be able to recognise their own experience from the descriptions within the inquiry, and others should be able to recognise the experience having only read about it within the confines of the study (Sandelowski 1986).

APPLICABILITY: TRANSFERABILITY RATHER THAN EXTERNAL VALIDITY

Transferability may be thought of as a qualitative parallel for external validity. External validity in a quantitative study, depending on its internal validity, refers to the generalisability of the findings and the representativeness of the subjects, tests and testing situations (Lincoln and Guba 1985; Guba and Lincoln 1989). Tightly controlled studies are made so in order to exclude variables to fulfil these tenets of external validity. However these issues are strongly debated by some authors who believe that these studies have great difficulty in making any assertions that the test conditions are comparable with those found in the natural setting (Lincoln and Guba 1985; Sandelowski 1993; Morse 1992). The concept of 'population' and 'representativeness' in such circumstances and in terms of qualitative research becomes suspect when attempts are made to 'generalise' findings to all contexts within the same population.

The Issue of Generalisability.

The concept of 'generalisability' is altered within a qualitative approach to that of 'transferability,' in which the burden rests on the person who seeks to make an 'application' of the findings to another contextual situation (Lincoln and Guba 1985). The aim then is to provide a clear explanation of the experiences under study within the natural setting and without controlling conditions, with the expectation that other researchers may choose to look for transferability of the findings to a similar group and similar contextual situations. Explanation is offered through 'thick description,' which includes information that assists the reader to understand the findings (Erlandson *et al.* 1993). For 'transferability judgements' to take place the researcher must therefore include 'careful description of the time, place and context' of the phenomena under study (Guba and Lincoln 1989: 241).

The Issue of Representativeness

Conventions are followed within quantitative studies regarding sampling to ensure 'representativeness' and thus 'generalisability'. These conventions include random selection of subjects, random assignment to groups within the study and predetermined sample sizes for statistical testing of findings (Sandelowski 1986). In contrast to these positivistic conventions, a qualitative approach of purposive sampling was used to direct the selection of participants throughout this study (Lincoln and Guba 1985). This form of sampling

offered the opportunity to gather the perceptions of specific individuals who could illuminate the phenomena under study. The sample size was determined as a result of sufficient numbers of nurses at each level of expertise and saturation of categories found in the analysis of the data.

In conclusion, to meet Lincoln and Guba's (1985) requirements for 'applicability' of the findings outside of the study, the researcher has sought to provide an interpretation of the findings that 'fit' the data. These findings are then made transferable if they are meaningful to the readers own experiences in similar situations.

Consistency: Dependability rather than Reliability

'Dependability' through 'auditability' is offered by Lincoln and Guba (1985) as a substitute criterion for reliability in qualitative research. The key concepts underpinning the conventional definition of reliability are those of stability, consistency and predictability within a research study. Reliability is typically demonstrated within quantitative studies by replication, for example, if two or more repetitions of essentially similar inquiry processes under essentially similar conditions yield essentially similar findings, the reliability of the inquiry is established (Lincoln and Guba 1985).

The 'decision trail' used in the research process is provided for the reader and is deemed dependable if another researcher given similar data, perspective, and situation could draw comparable conclusions (Powers and Knapp 1990). It is thus the aim of this study to offer a decision trail by offering the description of the method, analysis and findings which is clearly 'auditable' and 'dependable' for those who read and consider repeating this study.

Neutrality: Confirmability rather than Objectivity

'Neutrality' refers to the freedom from bias in the research process and product. In quantitative research, objectivity is the criteria of neutrality and it is achieved by establishing the reliability and validity of the study (Sandelowski 1986). Lincoln and Guba (1985) drew on Scriven's (1971) definition of objectivity, in which the emphasis is no longer on the researcher's objectivity but on the data. The issue then rests no longer on the researchers characteristics but the characteristics of the data: are they or are they not confirmable? Lincoln and Guba suggest that 'confirmability' has been established when 'auditability', 'truth value' and 'applicability' have been

achieved. Confirmability of the data was sought through constant use of examplars from the nurses' interviews to confirm the interpretation of the researcher of the findings within this study.

ACCESS AND SAMPLING OF THE SITES INCLUDED WITHIN THE STUDY

CRITERIA FOR INCLUSION OF SITES WITHIN THE STUDY

The hospital, ward and unit sites are detailed to describe the specific areas that participated within the study. Criteria for inclusion of sites within the research were utilised to direct applications for access to hospitals in the study. Given the nature of the data collection process, it was essential that the hospitals included were within easy travelling distance of the researcher's base. In order to meet the criteria the hospitals also needed to have a range of surgical units which included specialty surgical units and Intensive Care Units that could provide access to nurses working with patients following surgery.

The actual commencement time of the patient's surgery, the length of the time period in theatre and the arrival time of the patient into the nurse's care on the ward could not be predetermined with total accuracy. Therefore the researcher needed to remain in close proximity to the hospital in order to arrive at the nurse's side before the patient returned from theatre or recovery to the ward or unit. The researcher could then remain on the ward or unit and await the patient returning from theatre or wait nearby and the nurses were then able to notify the researcher of the arrival time of the patient into her care from theatre or recovery.

HOSPITALS, WARDS AND UNITS INCLUDED WITHIN THE STUDY

Site 1: Hospital

The first site was a private hospital which offered services for people requiring general and cardio-thoracic surgery. The wards within the hospital included an Intensive Care Unit for the care of patients following major Cardio-thoracic surgery. The nursing staff of this unit agreed to participate within the study.

Ward 1: Intensive Care Unit

The Intensive Care Unit (Ward 1) of the private hospital included within the study was a unit staffed by a predominantly Registered General Nurse

population with some Enrolled Nurses. The patient group admitted into the unit included children and adults who had undergone cardiothoracic surgery.

Site 2: Hospital

The second site was an National Health Service (NHS) hospital which had two specialty surgical units in which the nursing staff agreed to participate within the study.

Ward 2: Specialty Surgical Ward

The specialty surgical ward included within the study was a mixed gastrointestinal medical/surgical unit

Site 3: Hospital

The third site was an NHS hospital which included four specialty surgical units, an Intensive Care Unit (ITU) in which the nursing staff agreed to participate within the study.

Ward 3: Intensive Care Unit

The ITU (Ward 3) incorporated patients who had undergone plastic/maxillary/facial, gastrointestinal and vascular surgery along with patients admitted from Accident and Emergency for other medical and surgical problems. The two units functioned as semi-separate units but were incorporated within the same area and staffed by the same group of nurses.

Ward 4, 5 and 6: Specialty Surgical Wards

The four specialty surgical wards included a vascular surgical ward (Ward 4), a gynaecological medical/surgical ward (Ward 5) and a colorectal medical/surgical ward (Ward 6). A plastic/maxillary/facial surgical ward was also included for access to patients pre-operatively prior to surgery and their return to the ITU (Ward 3).

ACCESS TO THE HOSPITALS

Application for permission to carry out the research study was sought from the three hospitals. Letters of application and copies of the research proposals were sent to the administration of a private hospital (Site 1) and the Clinical Investigations Panel of two NHS hospitals (Sites 2 and 3).

Site 1: Hospital

A written request was made to the general and nursing administration of the private hospital applying for ethical and administrative permission to perform the study within their Intensive Care Unit. Executive members of the administration gave consent for the research to be performed within the hospital without requiring application to a separate ethics committee. Initially, permission was granted only for the pilot study of the research. However, on completion of the pilot study the hospital administration agreed to allow part of the main study to proceed at the same site.

Sites 2 And 3: Hospitals

A research proposal was placed before members of the Ethics Committee of the hospitals for permission to proceed with the study. The ethics committee requested nurse, patient and medical consultant consent to be obtained prior to commencement of the research.

ACCESS TO THE NURSES

GAINING PERMISSION TO APPROACH THE NURSES THROUGH THE SENIOR NURSING STAFF OF THE HOSPITALS:

Site 1: Hospital

The Director of Nursing (DON) was written to and an appointment was requested for the researcher to explain the study and the nurses and the patients of the hospitals potential involvement within the research. The DON delegated the Nurse Educator of the hospital to discuss the issues pertaining to the study with the researcher. Permission was then received from the Nurse Educator and DON for the researcher to involve the nursing staff and to approach the senior staff of the Intensive Care Unit of the hospital. The Nurse Educator then introduced the researcher to the Charge Nurse and Sisters of the Intensive Care Unit who agreed to participate in the study. The nurses were then approached individually and asked if they would consent to participate. All nurses approached agreed to participate within the study.

Site 2 and 3: Hospitals

The DONs of the second and third hospitals required an application of the research proposal be sent to the Director of Nursing Research within the Health Authority in conjunction with an application to the Clinical

Investigations Panel of the hospitals. The application was sent and permission given for the research to proceed within the hospitals. The Directors of Nursing then agreed to meet with the researcher to discuss access to the nurses and patients on the surgical wards, the High Dependency and the Intensive Care units of their hospitals.

They agreed to the inclusion of the nursing staff within the study and introduced the researcher to the Senior Nurses of the Specialty Surgical, High Dependency and Intensive Care Units. The researcher discussed the study with the Senior Nurses and was then given the opportunity to speak to the Ward Sisters of the wards and units. The researcher discussed the study with the Ward Sister of each unit and surgical ward and was then given the opportunity to speak to the ward nursing staff.

Several Ward Sisters asked the researcher to attend ward meetings initially to discuss the research with the staff who were on duty. The ward meetings provided the opportunity to discuss the study with the nurses working on the units or wards at that time. However, the nurses absent from the ward meeting later required explanation of the study and nurses who had been present often preferred to discuss the details again with the researcher before participating in the study.

Other Ward Sisters waived the initial meeting and preferred the researcher to explain to the staff as the study progressed and the opportunity arose to talk with the nurses on duty while the researcher was on the ward. The researcher could then explain the study and gain each individual nurse's consent for their involvement in the research. The latter became the approach used by the researcher in all of the units and wards to explain the details of the study and gain the consent of nurses to participate within the research.

GAINING CONSENT AND SAMPLING OF THE NURSES

GAINING CONSENT OF THE NURSES

The researcher approached each nurse individually on each ward and Intensive Care Unit regarding participation within the study. The nurses were each given an information sheet (Appendix iv) to explain the research project and were encouraged to ask any questions or raise any concerns they may have

about the study. It was explained that the researcher would observe them during a period of time which they thought had covered the post-operative assessment of one of the patients within their care. The researcher would then wait to interview them about the assessment and to discuss how they had developed their skills in this area of nursing practice.

It was agreed that the interview would be tape recorded and would only occur when a suitable opportunity in the nurse's workload allowed an absence from ward activities. It was also explained that all information received from the nurses would be coded for confidentiality and all computer and paper copy details would be under secure protection at all times. The researcher then answered any questions regarding the study to assist the nurses to make a decision regarding participation in the study. Each nurse was then asked to sign a consent form (Appendix v) prior to their participation within the study.

PURPOSIVE SAMPLING OF THE NURSES

Purposive sampling was used to collect data from nurses with a range of experience and educational backgrounds within clinical nursing practice. An ongoing sampling process occurred to include nurses whose experience of working in the field of nursing varied from newly qualified to many years in the field. However a nurse's involvement in the study could only occur if the opportunity arose in which a patient, having consented to participate in the study, had then been allocated to the nurse's care. The inclusion of nurses therefore depended to a certain extent on who had been assigned to care for the patient returning from operating theatre.

Where possible the nurse was approached the day before theatre and asked if she would participate in the study when the patient returned to her care post-operatively. However, the planned inclusion of nurse and patient in the study was not always possible, for a number of reasons. Staff sick leave on the day of the theatre, patients returning to the ward at the end of the nurse's shift, the assignment of student or enrolled nurses to the patient's care, change of ward due to higher dependency of the patient following surgery and death of the patient during surgery, all caused changes in allocation of patients to nurses. However, through the outstanding support of the staff responsible for allocation of the patients all of the nurses who were approached were eventually able to participate in the study.

SAMPLE GROUP OF ITU AND SURGICAL WARD NURSES

A purposive sample of sixty-one nurses employed in the three hospitals was reached, as it gave the opportunity to involve nurses with a wide range of experience and educational backgrounds. The sample group included thirty nurses working in four specialty surgical wards and thirty-one nurses from two Intensive Care Units. Nurses were purposively sampled to include women and men across a range of age groups, years of clinical experience and educational background. They provided details of their attendance of post-basic courses, academic qualifications, the type and length of period in clinical experience and breaks away from clinical practice. These demographic details and ratings are presented below.

GENDER AND AGE PROFILES

Data related to the gender characteristics of the sample group are presented in Table (3)

TABLE (3) GENDER CHARACTERISTICS OF THE NURSES

ITU/ SURGICAL WARDS	WOMEN	MEN
ITU	27	4
SURGICAL WARD	28	2

A similar distribution of men and women were found within the ITU and surgical ward nurse groups involved in the study. The ITU nurses included twenty-seven women and four men and the surgical ward nurses involved twenty-eight women and two men. Thus, ten per cent of the overall participants in the study were male and ninety per cent female.

Data related to the age characteristics of the sample group are presented in Table (4).

TABLE (4) AGE GROUPS OF THE NURSES

	20-24	25-29	30-34	35-39	40-44	45-49	50-54
ITU	2	11	7	7	3	0	1
SURGICAL WARD	11	8	8	2	1	0	0

The ages of the ITU nurses ranged from twenty-four to fifty years with a mean age of thirty-two years. The ages of the surgical ward nurses ranged from twenty-one to forty-one years with a mean age of twenty-eight years. The surgical ward nurse group included a greater number of nurses from the twenty-one to twenty-five year old age group. The ITU group had a greater number of nurses in the thirty-five to fifty year old age range. Thus a greater number of nurses in the surgical wards were under twenty-five with few nurses over thirty-five, while the converse was true of the nurses working in the Intensive Care Units.

YEARS IN CLINICAL PRACTICE

The ITU and surgical ward nurses were asked to detail their clinical experience in terms of years spent in clinical practice. This included the number of years within their current area of practice and/or Intensive Care environment, years spent in other areas of nursing practice and years spent apart from acute care practice.

Total of years following nurses registration

The ITU and surgical ward nurses years since registration are summarised in Table (5).

TABLE (5) YEARS SINCE NURSES REGISTRATION

	0 - 2	2 - 5	5 - 10	10 -15	15 - 20	20 - 25
ITU	0	11	7	6	6	1
SURGICAL WARD	13	6	4	7	0	0

The ITU nurses had been registered and employed in nursing practice from two to twenty-one years. The surgical ward nurses had been registered and were currently employed in nursing practice between one month and fifteen years. The distribution of the nurses according to years in practice varied considerably between the two groups. None of the ITU nurses had less than two years of employment in clinical practice. Just over half of the ITU nurses were found to have between two and ten years of clinical experience. A little under half of the ITU group had between ten and twenty-one years of clinical practice.

Interestingly, just under half of the nurses working in the surgical wards had less than two years of post-registration experience within clinical practice. One third of the surgical ward nurses had been registered between two and ten years. The remaining surgical ward nurses (approximately one fifth) had been qualified for over ten years.

Nurses full time/part time years spent in clinical practice in current specialty

The nature of employment of the ITU and surgical ward nurses as years in clinical practice within their current specialty (full time (F/T) or mixed between full time and part time (P/T) since registration are summarised in Table (6).

TABLE (6)
NURSES FULL TIME/PART TIME YEARS SPENT IN CLINICAL PRACTICE OF CURRENT SPECIALTY

	0 - 5 YEARS		6 - 10 YEARS		11 - 15 YEARS		16 - 20 YEARS	
	F/T	P/T	F/T	P/T	F/T	P/T	F/T	P/T
ITU	13	1	8	2	4	1	1	1
SURGICAL WARD	26	0	4	0	0	0	0	0

The ITU nurses ranged from two to sixteen years spent in specific ITU practice. A little under half of the ITU nurses had been employed for a period up to five years in clinical practice within the ITU environment. The rest of the ITU nurses had worked between five and sixteen years in ITU clinical practice. Five of the ITU nurses who had worked across this spectrum of years had chosen to alter their terms of employment from full time to part time work. Their decisions to change to part time work reflected other interests, for example, caring for young children and/or the pursuit of academic studies.

By contrast, most of the surgical ward nurses had less than five years of clinical experience within their current surgical specialty. Only four had between five and ten years experience within their specialised fields. No surgical ward nurses had greater than ten years experience within their surgical specialty. None had changed from full time work.

Years in other areas of nursing practice.

Most of the ITU nurses had worked in other areas of clinical practice outside of Intensive Care Units. These periods had lasted from six months to four

years and were interspersed with periods of employment in ITU or spent as a block of time in a particular ward or series of wards.

Half of the surgical ward nurses had spent periods of time in other areas of practice. Their movements were sometimes intermixed with periods of employment in ITU or spent as a block of time in a particular ward or series of wards outside of the current specialty. Six surgical ward nurses had worked within Intensive Care Units for periods ranging between five months and six-and-a half years.

Breaks from clinical practice

Over one third of the ITU nurses had taken one or more breaks from acute care practice in the hospital setting, compared with just eight of the surgical ward nurses. The duration of the breaks from acute care clinical practice were from three months to five and a half years. These nurses had taken breaks from practice to undertake courses, to have children, to travel or to take employment outside of nursing.

POST-BASIC AND ACADEMIC QUALIFICATIONS OF THE NURSES

Post-basic course profile

The details of the post-basic courses of the ITU and surgical ward nurses are summarised in Table (7).

TABLE: (7)
ENB RECOGNISED POST-BASIC COURSES

	ITU (General)	ITU (Special-ised)	Specialty related courses	Couns-elling	Research	Teaching & Assess-ing	Mental Health (RMH)	Midwif-ery (RM)
ITU	20	4	0	0	1	5	3	3
SURG-ICAL WARD	3	0	7	4	2	6	1	2

Two thirds of the ITU nurses compared with just three of the surgical ward nurses had completed ENB recognised Intensive Care courses. Thus two thirds of the ITU group had obtained a post-basic level of in-depth theoretical knowledge which informed their area of specialised practice.

Yet only one fifth of the surgical ward nurses held ENB courses specific to their current area of clinical practice. This group was made up of six nurses

who had completed courses pertaining to their interest in gynaecological nursing. Thus, only one of the remaining twenty-four nurses who worked in the other surgical wards held an ENB course specific to their current area of clinical practice. This was a burns/plastics course useful to the nurse's field of Ear, Nose and Throat surgery. The noticeably high number of ITU nurses who had completed readily available ENB recognised ITU courses contrasted with the low number of surgical ward nurses who had completed courses specific to their field of practice.

Academic qualifications

The details of the academic qualifications of the ITU and surgical ward nurses are summarised in Table (8)

TABLE (8)
ACADEMIC QUALIFICATIONS (COMPLETED) OF THE NURSES

	CERT-IFICATE	DIPLOMA	GRADUATE DIPLOMA	BACHELOR	MASTERS	PhD
ITU	8	2	0	4	0	0
SURG-ICAL WARD	8	2	1	3	0	0

Surprisingly, there was very little difference found in the number and levels of academic qualifications between the ITU and surgical ward nurses. Nine ITU nurses were in progress or had partially completed programmes ranging from diploma to Masters level. Similarly, six surgical ward nurses were working towards or had partially completed qualifications from diploma to graduate diploma level.

Overall, there were a number of similarities between the ITU and surgical ward nurse groups. The distribution of women and men across the two groups was similar. The number and level of academic qualifications were consistent across the nurse groups. Approximately half of the ITU and surgical ward nurses were undergoing or had completed one or more academic programmes ranging from Certificate to Masters degree level. The ITU and surgical ward nurses had completely roughly the same number of ENB courses which were non-specific to their areas of practice, for example, research awareness and teaching and assessing courses.

The key differences between the ITU and surgical ward nurses emerged in the following areas. The surgical ward nurses were on average younger, had been registered for fewer years and had spent fewer years in their current specialty than the ITU nurses. A further difference was found in the ENB courses completed by the nurses specific to their field of practice. Over two thirds of the ITU nurses had completed one or more ENB recognised courses specific to Intensive Care practice. In contrast, only those nurses working within the gynaecological field and one other surgical ward nurse had completed an ENB course specific to their sphere of practice.

GAINING CONSENT AND SAMPLING OF THE PATIENTS

GAINING THE PATIENTS' CONSENT

The researcher approached every patient individually on each ward and unit concerning the study. The patients were given an information sheet (Appendix vi) to explain the research project and were encouraged to ask any questions or concerns they may have about the study. The researcher explained that she would be observing the nurse caring for the patient during the period of time the nurse undertook the post-operative assessment.

The researcher would then wait for a convenient time to interview the nurse regarding the assessment of the patient and how the nurse had developed his or her skills in this event of nursing practice. It was also explained that all information received from the observations and interviews with the nurses would be coded for confidentiality and all computer and paper copy details would be kept under secured protection at all times. The researcher then answered any questions the patient may have had so that an informed decision could be made regarding participation in the study. Each patient was then asked to sign a consent form (Appendix v) prior to their participation within the study.

PURPOSIVE SAMPLING OF PATIENTS UNDERGOING MAJOR SURGERY

Criteria of selection were used to approach specific patients to participate in the study. The patients were purposively sought for inclusion in the study on the grounds of their elective admission for major surgery within any of the specialty surgical wards sites. The Nurse in Charge on each of the wards was approached for a list of patients who would be undergoing lengthy, major and

complex surgery during the following few days. The researcher would then request the patients agreement to participate in the study. Only patients having major surgery were approached to maintain the level of patient dependency expected on their return to the nurses care from theatre. The patients returning to the Intensive Care Units had undergone cardiothoracic, gastro-intestinal, vascular, maxillary/facial/plastics and hepatic surgery. The patients returning to the specialty surgical units had received major pancreatic, gastrointestinal, vascular, gynaecological or laryngeal surgery.

ETHICAL CONSIDERATIONS

PARTICIPATION OF PATIENTS IN THE RESEARCH

The nurses caring for patients pre-operatively were approached to enquire as to the appropriateness of requesting the patient to participate within the study. Many of the patients were having major surgery for grave and disturbing reasons and were distraught before their operations. Every effort was made to respect the feelings of these patients, and the researcher did not approach anyone who the staff believed would be distressed by the request to participate in the study. Once the nurses had safeguarded the approach to the patient the researcher would then give each person the pre-operative patient information sheet (Appendix vi), explain the research and request their signature on the consent form (Appendix v).

PARTICIPATION OF NURSES

The nurses having been approached previously and having read the nurse information sheet (Appendix iv) and signed the consent form (Appendix v) were found to be extremely willing to participate within the study. Care was taken by the researcher to negotiate the date of participation in the research with the nurse, as it became clear that some days of staff activity made involvement in the research very difficult due to lack of available time on duty. The nurses were also informed that all data collected during this study was coded to maintain confidentiality.

PARTICIPATION OF THE CONSULTANT SURGEONS

The Consultant Surgeons caring for the patients were also informed of the research. Letters were sent to every surgeon of each of the surgical wards which provided access to patients having surgery. The surgeons all responded with support for the research and involvement of the patients within the study.

THE DATA COLLECTION PROCESS

OBSERVATION OF THE NURSES' POST-OPERATIVE PATIENT ASSESSMENT

Every nurse who participated in the study was observed by the researcher receiving a patient into her care on return to the ward from the Operating Theatre or Recovery after major surgery. The researcher accompanied the nurse when the patient was to be received into her care in the Recovery ward. This situation occurred for all patients returning to the specialty surgical wards after theatre. When the patient was taken by theatre or recovery staff to the units the researcher remained with the nurse on the ward. The patients were delivered from theatre or recovery in the fashion described to the Intensive Care Unit's nursing staff. The researcher was then seated or standing in a position where the nurse's activities could be observed from a distance but would not be impeded or distracted by the researcher's presence.

The researcher carried a large note book in which detailed field notes were entered of the sequence of the nurses activities during the observed period of the assessment of the patient. The boundaries of the assessment period in the nursing activity were set by each individual nurse participating in the study. Field notes were taken of the nurse's activities from first sight of the patient up to and including the time when the nurse stated she had gathered sufficient information to be happy with her understanding of the patient's present health status and thus had completed her initial post-operative assessment of the patient.

SETTING THE SCENE OF THE PRACTICE WITHIN THE INTENSIVE CARE UNITS

The Intensive Care nurses worked within two ITUs. The first ITU was a predominantly cardiothoracic unit based in a private hospital and the second ITU was general in nature and found within a National Health Service (NHS) hospital.

Cardiothoracic ITU

The first unit was specialised in nature and focused on the patient requiring cardiothoracic surgery. Patients were scheduled for elective or emergency surgery and transferred routinely to Intensive Care immediately after completion of the operation. The care of the patients following such surgical

procedures as coronary artery vein graft surgery and lobectomy was thus an important part of the nurses role in the ITU. The patients state varied from very stable to a critically unstable cardiac condition on arriving in the unit from theatre. The respiratory status of the patients was also variable from those who were responsive and breathing spontaneously to those who were still fully dependent on mechanical ventilation. The patients were accompanied by the theatre medical and nursing staff to the unit where the nursing care of the patient was handed over to the Intensive Care nurses.

General ITU

The second group of ITU nurses worked within a fourteen bed combined General Intensive Care Unit within a NHS hospital. The unit cared for both medical and surgical patients arriving from the wards, the accident and emergency department and from the operating theatres. The hospital offered facilities for patients to undergo major elective and emergency vascular, gastro-intestinal, hepatic, oral/pharyngeal and maxillary surgery. Patients requiring post-operative ventilation or intensive monitoring were transferred to the ITU from theatre accompanied by the theatre medical and nursing staff. The patients who were breathing spontaneously but required monitoring were transferred into the Recovery ward and finally into the care of the nurses in the High Dependency section of the unit. The patients were accompanied by the Recovery area medical and nursing staff to the unit.

THE ARRIVAL OF THE POST-OPERATIVE PATIENT INTO THE INTENSIVE CARE UNITS

The researcher stood to one side and watched events in the nurses' practice and was rewarded with an informed observer's view of the complexity of each clinical incident as the patients arrived on each of the Intensive Care Units. The nurses burst into activity as each patient, accompanied by theatre or Recovery staff, was transferred into the unit. They began their assessment of the patient at the same time as they conversed with staff who accompanied the patient, and their assessment continued during the provision of immediate care. There were often between three and six nurses and doctors involved in the patient's care during the initial period of time following arrival on the ITU. One, two or three nurses from the unit would be present at the bedside to assist with the tasks at hand in the patient's care.

The nurse who was responsible for the care of the patient in the ITU was the focus of study. The theatre staff handed over the information about the patient's condition during the operation along with any salient issues from the persons past medical history to the nurse, and then left the unit. The nurse then continued her assessment of the patient and fulfilled the technical tasks required for the care of the patient in conjunction with her colleagues of the unit. The anaesthetist and the surgeon returned intermittently to check on the patient's status following arrival on the unit. The nurses continued passing information to each other and the doctors concerning the patient's condition as the tasks were completed, observations made and overall assessment of the patient's condition reached during this initial period of care.

The nursing tasks accompanying the assessment of the patient were numerous and involved monitoring each system of the body. The activities began with attachment of the patient to the appropriate machinery to observe and maintain respiratory and cardiac function and proceeded according to the approach used by the individual nurses involved in the patient's care. The monitoring and assessment of the patient was also accompanied by documentation of the patient's observations and treatment as the nurse administered care. The initial nurse's assessment of the patient lasted between fifteen minutes and one and a half hours, depending on the stability of the patient's condition, the interruptions to the nurse's care of the patient, and the ability of the nurse to reaching an understanding of the patient's condition.

The end of the initial assessment was recognised by the nurse as the time when she felt happy with her understanding of the patient's status and needs. The time period seemed to coincide with the nurse feeling she could now safely turn from observation and actioning of care for the patient to other ancillary tasks of monitoring and documentation of patient records. The nurse was required to document her care through various assessment tools/care plans which were utilised by the units.

The nursing care plans required statements regarding the management and monitoring of the patient for level of pain and sedation, neurological state, nutrition and hydration status, elimination of wastes, the state of hygiene, the status of the wounds. Further factors such as psychological, social and cultural, sleep status and generally 'settling' the patient into the unit were also included. The nurse, as she progressed with assessing and responding to the

patient's needs, spoke with other nurses, doctors, theatre technicians, physiotherapists, the patient's relatives and friends. The nature of the communication varied considerably, depending on the state of the patient, the number of nurses present and the ability of the nurse to cope with the immediate and progressive needs of the patient.

SETTING THE SCENE OF THE EVENT OF PRACTICE WITHIN THE SPECIALTY SURGICAL WARDS

The nurses worked in five specialty surgical wards. A gastrointestinal ward and an ear, nose and throat ward were found within one NHS hospital. Vascular, gynaecological and colo-rectal wards were involved within a second NHS hospital. The nurses were employed on the wards in various capacities including full time and part time ward staff, and from various agencies for the required shift. Patients were admitted pre-operatively to these wards and prepared for major elective surgery. The nurses, as part of their role on the wards, received patients into their care following major surgery (for example laryngectomy, femoral popliteal bypass, Whipples procedure and hysterectomy). The nurses were telephoned in the surgical ward to go to the recovery ward to attend the patient and transfer him or her to the surgical ward. The nurses received the patients following surgery from the recovery unit staff and returned with them to the wards. The care of the post-operative patient was a regular part of the nurse's role within these wards.

THE ARRIVAL OF THE POST-OPERATIVE PATIENT IN THE SPECIALTY SURGICAL WARDS

The patients were responsive, breathing with or without the assistance of oxygen via a mask, and monitored for cardiac activity and oxygen saturation rates when the ward nurse arrived in recovery. The patients were assessed by the ward nurse during the process of handover by the recovery nursing staff with the occasional involvement of the attending anaesthetist or surgeon. The patients were taken off the monitoring devices and transferred if the nurse considered the patient to be sufficiently stable to return to the ward. The nurse would then transfer the patient with the assistance of a theatre porter from recovery to the surgical ward by means of the lift system. The nurse's assessment of the patient, begun in the recovery unit, continued in the ward until such time as the nurse felt she had ascertained enough information to leave the patient for a short period of time to attend to other patients.

Once the nurse had completed the assessment of the patient, the researcher ceased taking field notes and waited for the opportunity to interview the nurse as soon as possible after the event. On many occasions the nurse was able to leave the clinical environment to participate in the interview within fifteen minutes of the end of the patient assessment. The longest interval of time before the nurse was able to leave the ward area was forty-five minutes. Observation by the researcher of the nurse's work offered the opportunity to ask the nurse to reflect immediately following the most recent incident in her clinical practice while it was fresh in her memory. The nurse's assessment of the patient thus provided an observed event in her practice as a focus for reflection on practice and the development of her skills, knowledge and expertise.

THE INTERVIEWS BETWEEN RESEARCHER AND NURSE

The Interview Room

A quiet room in each of the wards was used to conduct the interviews between the researcher and the informant. Finding a suitable and unoccupied room on the wards was not always possible for the interviews. The Staff Room was at times the only room available on the ward and, as a result, other nurses passed through the area on occasion. The interview was interrupted at that stage until the person had left the room unless the participant was happy to continue the conversation with the other person present. This situation occurred twice with the other individuals present for short periods of time during the interviews.

The Interview

The interviews took place during the nurse's work hours and at times the needs of patients on the ward required the discussion to be interrupted for the nurse to attend to their care. The interruption was only for a short duration of approximately ten minutes and the interview was then continued at the next most convenient time in the nurse's shift. Such interruptions, while disruptive to the nurse's train of thought, were important for the nurse to be able to concentrate fully during the interview, knowing the needs of the patients in her care had been met during the interview period. The interviews took the form of tape recorded semi-structured, in-depth conversations between the researcher and participant.

At the commencement of the interview, each nurse was asked to give a verbal description of the sequence of steps she took in the process of the post-

operative patient assessment. The interview progressed as the nurses were asked to reflect on the reasons and influences on the specific approach they used to gather information during the post-operative patient assessment. The interview continued with a discussion of the place of intuition in the assessment. Each nurse was then asked to gauge their position on an expertise continuum using Benner's (1984) levels of expertise, from Novice, Advanced Beginner, Competent, Proficient and Expert. A discussion of the nurse's development of skills and expertise in nursing practice followed in relation to the level they felt they had reached and what areas they needed to develop further. An example of a complete interview transcript is included in Appendix (vii).

At the end of each interview the researcher offered to discuss the notes taken of the observations of the nurse's activities during the assessment. The participants who agreed to examine the field notes taken of the sequence found they concurred with their recollection of the steps they had taken during the assessment process.

DATA ANALYSIS

A method for the analysis of qualitative data and a compatible computerised data filing system were chosen and utilised to undertake the processes of recording and analysis of the transcribed interviews. The method of data analysis proceeded using Lincoln and Guba's (1985) adaptation of the constant comparison method (Glaser and Strauss 1967). A computerised data filing system was required to provide comprehensive facilities for retrieving and working with the data (Field and Morse 1985). This system was chosen to complement the method of analysis, as they were inextricably linked throughout the analysis process. In the following pages, the computerised data filing system is outlined, the method of data analysis is described and an outline of the emerging categories is included.

COMPUTERISED DATA FILING SYSTEM

Data analysis requires a functional data filing system for management and retrieval of the data. Thus a computerised data filing system was prepared using an Apple Macintosh LC Computer and Microsoft Word 5.1a. The approach used within the filing system closely follows the method recommended by Morse (1991b) for analysing interactive interviews using the Macintosh Computer. Morse supports this method on the grounds that it is

simple and effective, allowing the researcher to concentrate on coding, categorising and identifying emerging patterns within the data rather than the mechanics required to run the programme. By contrast, the more complex commercial software programmes appear to require more of the researcher's time, effort and concentration to perform the mechanics of the data analysis (Morse 1991b). This approach offers the researcher the opportunity to remain in very close association with the interviews in their entirety as the categories and patterns emerge during the data analysis. The process of transcribing and filing the interview data within this data filing system is described in detail in Appendix (viii).

METHOD OF DATA ANALYSIS

A method of analysis was followed which facilitated the identification of emerging patterns within the findings of the study. Lincoln and Guba's (1985) steps of data analysis referred to as, 'unitising' and 'categorising' were taken to search for 'patterns' within the data. The emergence of units within the interview data are initially described. The next step, sorting of the units of data into categories is then explained. This section concludes with an outline of the emerging categories and patterns in the data.

The description of the method used to categorise the data in the analysis stage aims to offer a clear and auditable trail of the researcher's interpretation of the data. It is also important to note that there may be a number of ways in which data of this nature could be analysed and interpreted. The resulting set of categories represent the interpretation made by this researcher. For, as Lincoln and Guba point out, when dealing with qualitative data,

> the category set that emerges [can] not be described as *the* set; all that [can] be required of the analyst is that he or she produce *a* set that provides a 'reasonable' construction of the data. 'Reasonable' is most easily defined as a judgement that might be made subsequently by an auditor reviewing the process. (Lincoln and Guba 1985: 347).

THE EMERGENCE OF UNITS WITHIN THE INTERVIEW DATA

The first step of the analysis process involved listening to the audio-tape recordings and reading the transcripts of each of the interviews in their entirety. This preliminary step allowed the researcher to consider the thoughts

and feelings of the participants as they recounted the episodes from their practice. The nurses' reflections on reasons for decision-making during care and the major influences on the development of their current level of practice were read and re-read during this step in the analysis. This process also included the researcher's supervisor who read the interview scripts as they were transcribed and commented on the researcher's early analysis and interpretation of the interview data.

This initial step was followed by a line by line examination of the interview transcript for potential units of data which would become the foundation blocks of the categories and patterns of the findings (Lincoln and Guba 1985). Lincoln and Guba describe units of data as having two characteristics. The first is that they should be heuristic which means that the sections of data should offer some understanding or action that the researcher has recognised as important within the data. The second characteristic requires units to be the smallest pieces of data that are 'interpretable in the absence of any additional information other than a broad understanding of the context' of the research field (Lincoln and Guba 1985: 345). Therefore these pieces of data can be as short as a phrase or as lengthy as a paragraph. Lincoln and Guba state that any qualitative study utilising this approach will amass thousands of units to represent the raw field data.

Units of data began to emerge from the nurses' descriptions of their thoughts, feelings and actions during practice, the approaches they used and the influences they perceived on the development of their current level of knowledge and skill. As these units were identified, coding began and note of the code was included next to the data section to the right of the margin of the interview text. Again this step of the analytical process was continuously discussed during meetings between the researcher and her supervisor.

The units of data began to emerge naturally from the fundamental thrusts of the interview. That is to say, data surfaced in relation to the ways in which the nurses' described how they functioned during practice, the influences on the development of their clinical practice and aspects which came into play when the nurses were making clinical judgements during patient care. The emergence of the units of data related to these three fields is described below.

Units of data relating to the nurses' ways of functioning in practice

Units of data emerged from the nurses' descriptions of the episodes of care and the consequent interview data which related to different ways in which the nurses' functioned in their care of post-operative patients during practice. Four examples of units of data which related to the different ways in which the nurses functioned during post-operative care are included below.

The first example includes a unit of data which appeared to be related to the nurse's focus on the completion of the tasks involved in the monitoring of the patient. The nurse indicated some awareness of interpretation of the monitored observations in relation to the patient's state. However the central focus of the nurse's attention remained on consideration and completion of the set of tasks involved in the patient's post-operative care:

I checked that the observations were done, blood pressure, pulse were stable, no charting of vaginal loss or loss from her thigh wound ... I looked through the drug chart, he was written up for analgesia which seemed to be effective. IVI fluids running, no drains, no catheter, hadn't passed urine, hadn't drunk anything. [SURGICAL 5/E/1]	TASK ORIENTATED AWARE OF OBVIOUS SIGNS IN THE PT.

The second example demonstrates a unit of data which appeared to be related to a nurse's awareness of how she functioned as a learner, gaining knowledge from others and her need to be able to teach others effectively:

I need to learn how to teach, I think that is important. I learn from other staff nurses when going to get a patient from theatre and from others about maintaining a high standard of patient care. It's important because the students and people below you are learning from you. [SURGICAL 6/C/9]	LEARN-ING FROM AND TEACHING OTHERS

The third example involves a unit of data which reflected the need expressed by some of the nurses to follow a rigid set of guidelines during their administration of post-operative care. These guidelines were often fulfilled without a nurse fully understanding what signs she was watching for or the significance of them in relation to the patient's status:

Set guidelines to care were learnt by parrot fashion. I can remember not knowing why I was doing a lot of things ... Like half hourly obs for two hours and hourly for two hours. [SURGICAL 5/C/6]	RIGID FOLLOWER OF SET GUIDELINES

The fourth example illustrates a unit of data which depicted the way in which some of the nurses depended upon the direction of more experienced nursing staff in practice. These nurses sought the guidance of others to help them learn

the skills required to care for the post-operative patients in their field of practice:

When I started in Intensive Care I worked with people and they showed me what they did and what was best to do for the patient. [ITU 3/I/3]	DEPEND-ENT ON OTHERS

These units of data, while closely related to each other, identified subtle differences in how the nurses' functioned in their practice. The search continued throughout the interview texts to identify units of data which were similar to, or different from, the first units identified in this way. These units of data were often followed, or preceded by, information related to strong influences on the nurses' development of knowledge and skills in practice. Careful and continuous analysis was required to discern and then separate the units of data involved in the nurses' ways of functioning and the influences on the development of their practice.

Units of data relating to perceived influences on the nurses' development in practice

Further units of data emerged from the interview texts in relation to the nurses' perceptions of the influences on the development of their current level of clinical practice. These units of data were coded in relation to the different types of influences on the development of the nurses' knowledge and practice. Analysis of these units of data occurred without difficulty as the different types of influences were stated in very clear and discrete terms by the nurses.

Some units of data related to the nurses' perceptions of the importance of gaining sufficient depth of understanding of specific theoretical knowledge for the development of skilled practice to occur. These units of data related to gaining an understanding of applied anatomy, physiology and pathophysiology, pharmacology, knowledge of surgical procedures, knowledge of range of patient outcomes, knowledge of potential problems during peri-operative period, interpersonal skills, management skills, teaching skills and group/team skills.

An example is included to demonstrate a typical, clearly defined unit of data which related to a nurse's perceived need for a greater depth of bio-physical theoretical knowledge to develop her practice further:

> N. I need more textbook knowledge than anything else. I've got the practical skills but not so much the reading behind it ... for instance she's had a distal pancreatectomy and I was trying to think, Where's the insulin created, do I need to do a blood sugar. I need to know my anatomy and physiology more [SURGICAL 2/B/7]
>
> THEORY NEEDED
>
> ANATOMY PHYSIOLOGY

Units of data also emerged from the text in relation to how some of the nurses perceived the aspects of knowledge had been attained during the development of their practice. These sections of data described knowledge development through post-basic courses, especially field-specific courses such as Intensive Care, gynaecological and plastic surgery, health-related literature e.g. journals, or text books and by resourcing information from other health professionals.

Units of data were also found which referred to the difficulties experienced by some nurses in the development of aspects of theoretical knowledge important to their fields of care. These gaps in knowledge were perceived to occur as the result of a lack of availability of post-basic courses and nursing orientated literature pertaining to their field of interest. This caused the nurses to seek further understanding from medical literature and health professionals who were more familiar with the care required for patients in their field.

Further units of data also surfaced through the analysis process which related to the influence of others on the development of the nurses' practice. These data were closely interwoven with units of data which focused on the way nurses functioned in practice. The units could be differentiated by the nurses clear references in the data to the influence of others on their development rather than how they functioned as either a learner or a teacher in their field of practice. The influence of other health professionals came into play in the following ways. The data included nurses' descriptions of modelling their practice on that of other nurses and health professionals. Nurses with autocratic teaching styles were described as limiting learning opportunities through fear and intimidation. Others who were perceived to teach ineffective approaches to care were ignored by the nurses in the data. Alternatively, other nurses who were perceived to be open, approachable, knowledgeable and skilful in practice were described in the data as positive influences on the development of the nurses' practice.

Units of data were also found in relation to the influence of clinical experience on the nurses' development of practice. Growth of confidence in knowledge, skills and ability to make judgements and provide care was perceived to occur

(in part) from negative and positive experiences in practice. These involved exposure to a variety of patients, a similar patient group on a regular basis in practice, successful decision-making in the management of difficult or complex patient care situations, trial and error learning through mistakes or omissions made during care, reflection on experience and linking of theory to practical understanding gained from practice.

Loss of confidence in knowledge, skills and ability to make judgements and provide care was perceived in the data to occur as a result of a number of occurrences. These included lack of regular exposure to practice, long breaks away from practice, narrowing of knowledge to one speciality, exposure to an unfamiliar patient group, lack of familiarity with a new field and a new group of unfamiliar health professionals.

Units of data related to aspects of clinical judgement in the nurses' practice.
Units of data also emerged from the interview transcripts in relation to specific aspects of clinical judgement in the nurses' practice. The nurses' described these aspects of decision-making as they recounted the recent episodes of care. Data also surfaced in response to questions related to feelings and thoughts experienced in decision-making on other occasions during practice. These units of data related to the nurses' use of both intuitive and analytical or cognitive aspects of clinical judgement during patient care.

Intuitive aspects of judgement were described in considerable detail by the nurses. These descriptions included experiences of both positive feelings (e.g. 'something is very right') and negative feelings (e.g. 'something is wrong') with the patient's health status. Two examples, are included to demonstrate the nature of the data related to intuitive feelings experienced by nurses about patients in their care. The first unit of data is an example of a nurse's positive feeling about a patient's current state of stability and well being:

> You can say, 'This person is quite well and is going to remain well', you instantly know. There's something very right that you don't have to worry about. I intuitively knew (patient's name) wasn't anxious, he wasn't worried. [ITU 3/D/9] — POSITIVE INTUITIVE FEELINGS

The following data unit incorporates a nurse's negative feeling about the condition of a patient in his care:

> It's just a not-quite-right feeling. You know if you are uncomfortable with a situation ... because you've experienced it before there's something that sets you slightly on edge you're a bit like a cat on a hot tin roof. It makes you feel that something is in the offing but you're not quite able to put your finger on what's going to occur. [ITU 1/J/7]

NEGATIVE INTUITIVE FEELINGS

Further units of data emerged in relation to the basis of the nurse's intuitive feelings which included uncertainty in relation to patient change (e.g. 'can't put my finger on it'), unconscious recognition of subtle clinical changes in the person (e.g. 'look of the patient'), sensing of change (e.g. 'suddenly comes'), experience and knowledge (e.g. 'knowledge from past similar patient situations') and growing knowledge over time of the person on an emotional, psychological and physical level (e.g. 'knowing the patient').

Data was also gathered into units relating to the nurses' physiological (e.g. 'pulse-racing', 'Adrenalin-rush feeling', 'fear'), affective (e.g. 'happy', 'unhappy', 'concern', 'fear', 'anxiety', 'excitement'), behavioural and cognitive (e.g. 'checking the patient's clinical signs', 'keeping a closer eye' on the person, 'involving a colleague' to assess the patient) responses to their intuitive feelings of concern about the patients.

Further data surfaced from the interview texts in relation to ways in which the nurses' intuitive judgements and their consequent responses were validated. These included confirmation through the outcome of the episode in the patient's care (e.g. 'ignore the feelings at your own peril') and confirmation of change and support given by more senior and experienced nurses. Units of data were also discovered in relation to the devaluing of the nurses' intuitive feelings. Fear that the nurses' could be wrong and therefore look silly before colleagues emerged clearly from some of the interview transcripts.

Data relating to analytical aspects of judgement were described by all of the nurses. These ranged from simple to more complex gathering and interpretation of clinical information to assess and make judgements of patients' conditions. Analytical processes were also in use following intuitive experiences as the nurses began a conscious search to identify, in measurable terms, the source of their concerns about the possibility of change in the patients' conditions.

THE SORTING OF UNITS OF DATA INTO CATEGORIES

The essential tasks of sorting the units into categories followed the constant comparison steps described by Lincoln and Guba (1985). The first units of data which resulted from the analysis of the original interview became the basis of potential categories. The coded units of data which emerged from each consequent interview were perused, and when essentially similar to previously coded units were included within the pre-existing categories. The researcher constantly reviewed the data and where this was not the case the different unit of data was incorporated into a new category. New categories grew swiftly initially and then decreased as consistent findings emerged amongst the data.

The properties of each category need to remain internally consistent to justify the inclusion of each unit of data (Lincoln and Guba 1985). Therefore the sorting of data into categories required the drawing together of units under consistent conditions. To maintain consistency the categories were given names that incorporated the essence of the units of data and were constantly reviewed to ensure that all of the units belonged within the designated category.

Grouping of the units into categories relating to the ways nurses functioned in practice

The outcome of this process allowed units of data to be grouped into four major categories which reflected the major ways these nurses' functioned in practice. Units were first grouped together to form a category relating to the nurse's perceived ability (or lack of ability) to act autonomously in practice. The common denominator of these units was that they referred to the nurses confidence in her knowledge and ability to function without the guidance of other nurses to make decisions and act on them in patient care. The second category grouped data which was connected with the nurse's ability (or inability) to be flexible in her assessment of patients during practice. These units contained statements which referred to the nurses' following guidelines in patient monitoring or responding in a flexible manner to their interpretation of signs during their assessment of the patient.

Units of data related to the nurses' ability (or inability) to be holistic in practice were grouped into a third category. These data chronicled a range in the nurses' attention from a focus on a set of tasks required in care to a centred

awareness of the patient for whom they chose tasks as a means to provide holistic care. Units of data related to the nurse's confidence and perceived ability to teach others in practice were grouped into a fourth category. These segments of data contained statements which described nurses' ways of functioning as learners to gain the necessary skills and knowledge. This role altered as nurses became more knowledgeable and confident to function as a teacher of others within their domain of practice.

Grouping of the units into categories relating to the perceived influences on the nurses' development in practice

Units of data were also grouped into a further four categories which identified the major influences on the nurses' development in clinical practice. These included aspects of theoretical knowledge, reflection on clinical experience, learning from others and personal characteristics such as motivation and commitment to learning and developing further knowledge and skills for practice.

Grouping of the units into categories relating to aspects of clinical judgement in the nurses' practice

Further units of data were grouped into categories relating to the intuitive and analytical aspects of clinical judgement of practice. All of the related elements of intuitive judgement were connected and described in relation to the cognitive aspects of their clinical reasoning. The relationship between the intuitive and analytical aspects of judgement were also interpreted as an interwoven and ongoing process. The nurses' description of the aspects involved in their clinical judgements were then viewed in relation to the ways in which they functioned during practice.

At this stage the categories were formative and this process caused some movement of units of data from one to another. For example units of data moved from the way of functioning as a clinical teacher in practice to the influences of others depending on the focus of the statement i.e. was it related to the development of knowledge and/or skill or the role of the nurse working with other nurses in practice? Movement of units also occurred between the ways of functioning related to task orientation in patient care and that which focused on the nurse's need to rigidly follow a set guideline in practice. The units of data were finally clearly separated into these two respective categories on specific differences. They either described the nurses' attention to tasks or

incorporated statements related to the rigid following of guidelines of post-operative care laid down by ward routine, taught through courses or directed by medical order.

This process continued until all data had been included within categories or, if clearly irrelevant to the focus of the research question, discarded for use within the presentation of the findings. Data which moved beyond the boundaries of this study included such issues as restraints on nurse's work in practice by management styles and policies. An example of this type of data is included below:

> Every nurse in the place is busier now. She also has more responsibility and sometimes it seems her hands are tied higher behind her back than ever ... You're accountable for what you do but at the same time if you disagree with something that has been passed down from higher authority it becomes your problem. The fact that the thing might be inherently wrong does not come into it. [ITU 1/S/22]

The categories were also reviewed for overlap and ambiguities were avoided by endeavouring to make them as homogeneous as possible internally and as heterogeneous as possible externally. The cessation of data collection and analysis was guided by the steady emergence of commonalities within the categories and the lack of new material outside of the categories. A final review of the entire category set was made to make sure nothing had been overlooked within the analysis.

THE EMERGENCE OF CATEGORIES AND PATTERNS IN THE DATA

Once the emergence of the categories occurred, the search became more focused on identifying patterns within and between the categories. Lincoln and Guba advise researchers to characterise each category by giving it a 'name or title that catches as well as possible the "essence" of the ... content of the category' (Lincoln and Guba 1985: 348). They go further and advise not only to review the units for possible overlap but to search for possible relationships between categories. Categories, they claim, can be 'subsumable under others' and that 'some categories are unwieldy and should be further sub-divided' (Lincoln and Guba 1985: 349). This was certainly found to be the case in this study as three major groups of categories had emerged from analysis of the vast number of units of data which emerged from the interview texts.

Emergent patterns between the categories depicting the ways in which the nurses functioned in practice

The categories which related to the four different ways of nurses' functioning in practice were found to have sub-categories or levels which reflected patterns in the nurses' development from beginner to expert practice. Initially, the researcher had considered the possibility of three levels for each of the ways of functioning. However, three levels did not achieve 'goodness of fit' with the data (Lincoln and Guba 1985). The use of only three levels would require the middle band to stretch from just beyond the advanced beginner's level to just beneath the expert's.

Upon further analysis of the data and discussion between researcher and supervisor, the middle level was split into two, producing four levels. These two levels differentiated between the competent nurses' ways of functioning as they developed beyond the advanced beginner and the proficient nurses, who were moving nearer to the experts' ways in practice. Examples of how the units of data were found to relate to each other at the four different levels within the ways of functioning during practice are included in Appendix (viiii).

These four levels were not informed by Benner's (1984) original five-stage model of skill acquisition in nursing. However, as it happens, these findings do invite comparison and contrast with Benner's work. Benner's original five levels would seem inappropriate as the three levels first considered during the analysis of the findings. As stated above, four levels of practice emerged as the most suitable from analysis of the patterns of the ways nurses functioned in this study. These findings support Benner *et al.*'s (1996) assertion of four levels in the development of practice in their most recent research on clinical expertise. This point is considered in detail later in the discussion section (Chapter 12).

First, a pattern emerged within the way of functioning which ranged from nurses dependency on others to the ability to function autonomously in practice. The first of the four levels included data related to those nurses' who described a dependency or need for guidance and direction by more experienced staff when making decisions during patient care. They described feeling unhappy if required to manage complex procedures and make judgements during care independent of direction. The second level

incorporated data in which some of the nurses described feeling more confident and able to make accurate assessments and decisions with limited supervision. These nurses still sought guidance from others for care which fell outside of the familiar range of care for expected outcomes.

The third level involved nurses who described making quite independent decisions during care and rarely needing to seek advice or direction from other recognised experienced nurses. The fourth level involved data in which nurses described functioning in patient care as independent and autonomous practitioners, able to trust the accuracy of their own judgements in complex patient situations without the guidance of other nurses.

A further pattern emerged within the next category which incorporated four levels in the nurses range of function from student learner to teacher in practice. The first level involved nurses' descriptions of their need to learn from others to develop their knowledge and skills in the assessment and provision of patient care. The second level involved nurses' descriptions of the continuing process of deepening their understanding and practical skills by learning from others, post-basic courses and through clinical experience. These same nurses described growing confidence in their knowledge and clinical skills with which to teach other, less experienced nurses aspects of patient care.

The third level of this category included the nurses' descriptions of their development of in-depth knowledge and clinical experience with which they taught other nurses in their field of practice. These nurses sought information from other very experienced nurses for specific reasons only. First they confirmed their use of the most recent changes in treatment. Secondly they checked their interpretation and judgement of very complex and unclear situations prior to changing nursing care for the patients. They also sought to learn managerial skills from these skilled nurses. The fourth level involved recognition by some of the nurses' of their role in staff development within their sphere of practice. These nurses described teaching others by sharing their in-depth knowledge and skills during discussions relating to decision-making and planning care in patient care episodes. They saw teaching as an important aspect of their role and undertook to educate other staff so that they could handle the complexities and management of patient care.

A third pattern emerged within the category involving the nurses' ways of functioning which ranged from task orientation to a holistic focus on the patients' in practice. The first of the four levels incorporated data in which nurses described focusing on the delivery and completion of tasks, observations and activities during the care of the post-operative patient. These tasks were pre-determined by ward protocol or medical orders to provide basic post-operative care. The second level depicted nurses' focus on tasks required for the patient's care but also including some assessment of the significance of clinical cues observed in the patient's situation.

The third level involved nurses' descriptions of focusing on the assessment of the patients but retained some attention/awareness of the tasks being undertaken during patient care. The fourth level incorporated nurses' descriptions of completion of tasks while maintaining a central focus on interpreting the observations and results obtained from the tasks to assess the patient and action care.

A fourth pattern surfaced within the category in which nurse ranged in their function from rigidly following set guidelines to a state of flexibility in their assessment and patient care. The first of the four levels included the nurses' description of following the taught sequence of nursing tasks or procedures identified in the ward routine of post-operative care. They described basic understanding of rationales for care and could identify overt abnormalities in the clinical findings. The second level included the nurses' descriptions of following a routine approach to post-operative care but were able to assess the relevance of more clinical signs to the patients' post-operative status.

The third level involved the nurses' descriptions of how they used their knowledge and experience to guide their approach to assessment and decision-making in patient care. The sequence of observations and actions depended upon the clinical signs noted in the patient and the nurses' judgement of the need for immediate nursing action. The fourth level incorporated nurses' descriptions of utilising a totally flexible approach in response to their interpretation of salient clinical observations gathered through a variety of sources to make a comprehensive assessment of each individual.

Ways of functioning in practice as potential indicators of nurses' development of clinical expertise

It became clear that the patterns found within the ways the nurses functioned in practice offered a frame of reference for distinguishing between nurses at different levels of expertise. These ways of functioning could therefore act as four potential indicators of the development of nurses' clinical expertise. Therefore the descriptive name of the category group, which was 'ways of functioning' was altered to become potential indicators of the development of nurses' clinical expertise. The four potential indicators were named after the way in which the nurses functioned, that is, 'from rigidity to flexibility in patient care', 'from student learner to teacher in practice,' 'from dependency to autonomy in practice,' and 'from task orientation to holistic practice.'

Each of the four potential indicators thus emerged with four levels which represented distinctions in the development of knowledge and skill across a continuum of nurses' practice. The four levels were given names depicting advancing practice which incorporated 'advanced beginner, 'competent,' 'proficient' and finally, 'expert'. Each level represented a qualitative change indicative of an increase in nurses' clinical expertise. This change was expressed by a difference in the way in which a nurse functioned in comparison with others in practice. The four potential indicators, as they existed at each of these levels, are presented separately below.

The first potential indicator of the nurses' developing expertise is outlined in Table (9).

TABLE (9) INDICATOR OF DEVELOPING EXPERTISE: 'FROM RIGIDITY TO FLEXIBILITY IN PATIENT CARE'
A rigid focus on guidelines for patient care: the advanced beginner nurse
Changing approach from rigid following of guidelines to emerging awareness of the salience in patient signs: the competent nurse
Increasing awareness and response skills to patients signs: the proficient nurse
Flexible responses to the patients signs: the expert nurse

The second potential indicator of the nurses' developing expertise is outlined in Table (10).

TABLE (10) INDICATOR OF DEVELOPING EXPERTISE 'FROM STUDENT LEARNER TO TEACHER IN PRACTICE'
Learner in practice:- the advanced beginner nurses
Learner and emerging teacher:- the competent nurse
Effective teacher and occasional learner:- the proficient nurse
Knowledgeable teacher:- the expert nurse

The third potential indicator of nurses' developing expertise is outlined in Table (11).

TABLE (11) INDICATOR OF DEVELOPING EXPERTISE: 'FROM DEPENDENCY TO AUTONOMY IN PRACTICE'
Dependent practitioner: the advanced beginner nurse
Growing independent in practice: the competent nurse
Relative independence in practice: the proficient nurse
Autonomous practitioner: the expert nurse

The fourth potential indicator of developing expertise is outlined in Table (12).

TABLE (12) INDICATOR OF DEVELOPING EXPERTISE: 'FROM TASK ORIENTATION TO HOLISTIC PRACTICE'
Task orientation in patient care: the advanced beginner nurse
Task orientation with increasing patient awareness: the competent nurse
Patient awareness with decreasing task orientation: the proficient nurse
Holistic carer: the expert nurse

Developing patterns between the major influences on the development of the nurses' clinical expertise

Categories of the major influences had emerged from the nurses' descriptions of sources which had been significant in providing the knowledge which guided their perceptions, feelings, thoughts, and actions in clinical practice. Four major influences emerged, namely, the nurse's own level of motivation and commitment to develop the knowledge required for skilful practice; learning from other nurses through participant observation and discussion of patient care episodes during clinical practice; gaining an understanding of and ability to apply theoretical knowledge, especially of the biophysical and psycho-social sciences to nursing practice; and learning through reflection on clinical experiences in practice.

These influences on the nurses' development of knowledge were found to be deeply involved in the development of the ways in which the nurses functioned in practice. As such they were intertwined within the four potential indicators of the development of the nurses' expertise. After lengthy consideration and discussion between researcher and supervisor it was agreed that these influences were best presented as interwoven elements included throughout the findings as they appear at every level across the indicators of developing expertise. These influences were thereafter described as major influences on the development of the nurses' clinical expertise and as such are listed in Table (13).

TABLE (13) INFLUENCES ON THE DEVELOPMENT OF THE NURSES' CLINICAL EXPERTISE
Motivation and commitment to development of practice
Learning from others in practice
Theoretical knowledge applied to nursing practice
Reflection on clinical experience

Developing patterns between aspects of clinical judgement in the nurses' practice and developing clinical expertise

This category incorporated data which illuminated two major processes in the nurses' clinical judgement of a patient's condition during practice. The first process was that known as analytical or cognitive thinking in which the nurses' consciously considered information to reach a judgement. The second process involved the nurses' use of an intuitive awareness of change which occurred without any conscious effort and informed their judgement processes during practice. Intuitive awareness gave rise to feelings, physiological and behavioural responses which often led to a return to a cognitive or analytical mode of thinking to identify the case of concern. These two major components of nurses' clinical judgements are incorporated in Table (14).

TABLE (14) COMPONENTS OF THE NURSES' CLINICAL JUDGEMENT IN PRACTICE
Analytical thinking
Intuitive recognition

Analysis and consideration of these aspects of clinical judgement within the complete interview texts revealed differences which appeared to relate to the depth of the nurses' knowledge, ability and confidence in their practice. As a result these units of data were revisited following the identification of the four levels of expertise in the nurses' practice which are outlined in the section of the findings titled, 'indicators of expertise postscript'. The intuitive and analytical processes involved in the nurses' clinical judgement were found to be different at the four levels of practice and these differences are described in detail in the findings section.

The potential indicators of developing expertise form the substantive framework for the presentation of the findings. However, clinical judgement has such a high degree of importance that a separate chapter has been included to detail the relationship between the two components of nurses' clinical judgement and their level of clinical expertise. The following section introduces these findings which are detailed over the following seven chapters.

INTRODUCTION TO THE FINDINGS

The findings from the data analysis are presented in the following six chapters of the study. Chapters Six to Nine inclusive provide detail of the four potential indicators of developing nursing expertise. These chapters also incorporate data which illuminates the major influences which underpin the nurses' development in practice. These include motivation, comprehensive understanding of and ability to apply bio-physical and psycho-social knowledge, the ability to synthesise empirical knowledge with knowledge gained from experience and the ability to learn from expert role models in practice. These chapters culminate with the 'Indicators Postscript' which identifies each nurse's level of expertise from the data. These levels are then compared with the professional judgements of expertise made by the nurse triad prior to data analysis. In Chapter Ten, the relationship between the nurses' clinical judgement and developing expertise is presented. The analytical and intuitive processes of clinical judgement are described in relation to the four levels of the nurses' expertise. Chapter Eleven explores 'The Expertise Jigsaw' through the use of case studies which encapsulate the influences and indicators found in the experiences of four nurses, one at each of the four levels of expertise.

CHAPTER SIX:
`FROM RIGIDITY TO FLEXIBILITY IN PATIENT CARE' - A POTENTIAL INDICATOR OF DEVELOPING EXPERTISE

INTRODUCTION

Observation of practice and examination of the transcript data made possible the identification of four 'levels of function' along a continuum between rigidity and flexibility in patient assessment. These levels were identifiable within a dynamic spectrum in which the nurses' approach altered in nursing practice. Qualitative differences emerged from the data in the ability of nurses to take a flexible approach to gathering information to complete a comprehensive assessment of patients following major surgery.

The relationship between expertise and level on the continuum can be expressed as follows:-

- A rigid focus on guidelines for patient care: the advanced beginner nurse
- Changing approach from rigid following of guidelines to emerging awareness of the salience in the patient's signs: the competent nurse
- Increasing awareness and response skills to the patient's signs: the proficient nurse
- Flexible responses to the patient's signs : the expert nurse

The lowest level identified advanced beginner nurses who rigidly followed the taught sequence of clinical observations and procedures found in ward routine orders of post-operative care. These nurses had basic understanding of the rationales for the nursing tasks and recognised basic abnormalities in the routine observations of the patient. The second level included competent nurses who continued to follow a routine approach but were more aware of the relevance of the clinical signs to the patient's post-operative status. The third level found proficient nurses who were increasingly flexible in their approach to patient assessment. They used their knowledge and experience of similar patient situations along with clinical guidelines to direct the sequence of their assessment of patients. Expert nurses, at the fourth and most skilled level of

this continuum, utilised a responsive and flexible approach to the assessment of patients in their care. These nurses drew on their deep theoretical knowledge and extensive experience to direct the gathering of relevant information to make a comprehensive assessment and judgement of each post-operative patient.

The four levels from rigid advanced beginner to flexible expert in care were dynamic in nature. The development or decline of a nurse's ability to use a flexible approach in her assessment of patients depended upon several factors. The nurse's pathway of learning assessment skills in patient care were major factors. The acquisition of experiential and theoretical knowledge of the field also informed the nurse's understanding of the significance of the patients' clinical signs and coloured her response to them. Examplars are included from interviews with surgical ward and ITU nurses which demonstrate the influences on the nurses' ability to take a flexible and adaptable approach to assessment of the patients.

A RIGID FOCUS ON GUIDELINES FOR PATIENT CARE: THE ADVANCED BEGINNER NURSE

Nurses at the advanced beginner level followed a rigid approach using structured guidelines to provide information for the assessment of patients following major surgery. The nurses followed documented ward routines and care plans for post-operative patients which included measuring of vital signs such as pulse, respiration, blood pressure, temperature, observations of drains, tubes, wound site and level of pain in the patients.

The clinical observations were completed with limited understanding of the rationales for the sequence of measurements or the relationship of one to another within the overall assessment of the patients. The nurses depended on the rigid structure of the guidelines to give direction to these activities. Observations were measured and reported to more experienced nurses and medical staff who interpreted the information to make judgements on the patient's condition. Examplars from surgical ward and ITU nurses are included to demonstrate the beginner's firm adherence to written or verbal guidelines for post-operative patient care.

These nurses had developed their initial knowledge of post-operative patient care through three influential pathways. First, they were taught the basic

principles of post-operative patient care during pre-registration programmes. As students, the nurses were taught to complete care plans in accordance with these principles and the nursing process. They did not recall receiving any formal instruction in how to conduct a nursing assessment on which to base clinical judgements of the patient's condition. Thus the latter skills appeared only in the most rudimentary sense in these nurses' processes of care. A nurse described studiously following the post-operative care plan/chart to provide direction to care as follows:

> The post-op. chart, I would use as a checklist that you run through ... It's got pain and nausea and wound all the vital things that you do for the patient ... I remember I was first introduced to the post-op chart in my second ward in my first year ... It's one of those things that you use constantly throughout your training so you become quite familiar with it ... Its ingrained in my mind. [SURGICAL 2/K/2]

The beginners perceived, after reflecting on the post-operative care taught in their pre-registration programmes, a gap in their knowledge of how to effectively assess a patient, as noted in the following:

> Your pre-registration course has influence, that's where you learn your first information about nursing. It's where they teach how things should be done. The nursing process comes into everything and part of the nursing process is assessment isn't it? ... No, I don't remember being taught how to assess. [ITU 3/I/3]

The nurses' rationales for adhering closely to these guidelines of routine post-operative care were based in the support they received by the other qualified nurses and its widespread use throughout the hospitals. A nurse explained her use of the post-operative chart to identify what to 'do' for the patient:

> It was because so many people come back from theatre and need the same things doing [that] this core plan has been devised ... It was explained to me, you could assess everyone individually but most of the things would probably be the same so that's why its used ... I can remember being told, 'look at the care plan and it will remind you of things you need to do'. [SURGICAL 2/K/2]

Experienced nurses recalled being taught as beginners to follow rigid guidelines to post-operative care by nurses who had also been taught the rudiments of care in this fashion. As one nurse noted:

> [I learnt by] parrot fashion. I can remember not knowing why I was doing a lot of things, always checking for shock and haemorrhage, half hourly obs for two hours and hourly for two hours ... But never remembering what I was looking for. [SURGICAL 5/C/6]

A further influential pathway of learning, known as 'sitting by Nellie,' involved qualified nurses teaching students how to 'collect' patients from recovery staff in clinical practice. The calibre of these teachers, themselves often newly registered nurses in the surgical wards with limited experience and knowledge, had a powerful impact on the nurses' development of knowledge in this field. The qualified nurses accompanied first year students, second and third year students were required to 'collect' post-operative patients from recovery staff without supervision. The combination of following guidelines and learning by 'sitting by Nellie' provided the nurses with a ritual and rigid approach to care. A nurse noted the impact of this form of learning in this way:

> The post-op instructions are done for safety and comfort ... We are taught to look for signs of shock ... Is there anything that hasn't been reported, anything hidden ... It was just [the] sitting by Nellie approach, learn as you go along in your training. Someone says this is a good thing to look for ... It's still a bit ritualistic. [SURGICAL 5/E/6]

Nurses at the advanced beginner level found the admission of patients from theatre to ITU to be a complex and difficult period in which they endeavoured to complete the required care safely and quickly. They sought, in the absence of in-depth knowledge, to follow rigid guidelines from pre-registration programmes, ward routines and medical orders of care. The ITU nurses also learnt to follow a sequence in the care of post-operative patients from working with and taking direction from other nurses in two variations of the traditional 'sitting by Nellie' method.

The first and formalised method involved a mentorship system in which more experienced nurses were appointed to teach inexperienced nurses the sequence of observations and care for patients arriving after surgery. The impact of these learning approaches on inexperienced nurses can be recalled through the reflections of experienced nurses. A skilled nurse reflected on the way in which she initially learnt the sequence of care of the post-operative patient thus:

> In ITU my first patient came back with a balloon pump and I passed out ... I worked with a mentor, if she wasn't on, another Sister took over ... They told you how to take the patient back safely ... They knew it was going to take four patients before you got used to the sequence ... So you stopped panicking to stay calm and get the things that are important done ... As things got really busy you tended to be left to your own devices. [ITU 1/N/5&6]

The second and more informal approach was through participant observation while working with other nurses to complete the necessary tasks and observations of the patients on arrival from theatre. These nurses gained confidence in their skills to complete the routine sequence of tasks through repeated experiences of caring for post-operative patients in ITU. As one nurse described:

> When you go to the wards you find out how things are done ... No, I can't really remember being taught how to assess. I've learnt it as I've gone along and from other people, their techniques and what they do. [ITU 3/I/5]

The few nurses at the advanced beginner level who had been taught a head-to-toe or systems framework to patient assessment during their pre-registration programmes were more flexible in their assessment of post-operative patients. The systematic examination of the patient's clinical signs in comparison with expected physiological features assisted these nurses to identify obvious signs of deterioration following surgery. However, to a certain extent these nurses still needed to follow guidelines to carry out a routine assessment, due to their lack of knowledge within the field. They required further theory and experience to develop a detailed understanding of the importance of particular clinical signs. Nurses who had reached this level of awareness were emerging at the competent level of flexibility in care. One nurse described her approach thus:

> I learnt by practice and I do remember the head to toe. I think I've always been taught that since training ... I've used the Roper, Mead model with the systems as well. When I assess I usually go from head to toe. But when I go from head to toe I'm thinking of the systems. Head for Neuro, Chest, cardiac that sort of thing. [ITU 1/G/4]

CHANGING APPROACH FROM RIGID FOLLOWING OF GUIDELINES TO EMERGING AWARENESS OF THE SALIENCE IN THE PATIENT'S SIGNS: THE COMPETENT NURSE

Nurses at the competent level demonstrated a shifting approach from a rigid routine of care to increasing awareness of the relevance of the clinical signs to the patient's condition. They met the requirements of the designated care identified in the medical treatment orders and post-operative charts/care plans. Simultaneously, competent level nurses described a greater focus on clinical observations, perceiving the salience of some of the patients' cues. Their

understanding of the significance of specific clinical signs were enhanced by increased theoretical knowledge, learning from others and experiences of similar patient situations.

Post-basic courses, especially the ITU courses, provided the nurses with a thorough head-to-toe approach to patient assessment. The nurses also developed knowledge in patient assessment from trial and error and learning from others. Initially, many had been taught to care for patients using a routine approach referred to by some as a 'conveyor belt' style. Others, taught by practitioners with more flexible and individualised approaches, felt they had gained greater knowledge and ability to detect signs of change during patient care from this method of clinical teaching. However, the thinking of the competent nurses was still predominantly based on meeting the ward guidelines or the requirements of the surgeon. Examplars taken from surgical ward and ITU nurses demonstrate their careful adhesion to the guidelines in patient care.

Some of the nurses, when newly qualified, had been taught to follow regimes which required patients undergoing similar surgery to be cared for in a uniform fashion. A nurse reflected on the lasting influence of being taught to care for patients in this way:

> As a newly qualified staff nurse, I got lots of experience ... But it was like a conveyor belt ... The patients were assessed before they went to theatre and when they were collected but it wasn't on an individual basis ... The assessment was along the lines of 'well they have had a Laporoscopy so they are going to have shoulder pain' ... It was structured in that way when you were taught by mentors. [SURGICAL 4/E/9&10]

Other more supportive and flexible teachers assisted the nurses to develop their skills of assessment without being limited by the directives of the care plans. One nurse noted the impact of these nurses teaching styles thus:

> The one's that talked to the patient, explained as they were going through it ... They were explaining it to me as well, 'This is what we're doing and this is why we're doing it.' It is obviously influenced by what I have seen other people do. [ITU 3/A/4]

Many of the nurses described learning to identify and assess important signs in the post-operative patient through trial and error. One nurse described this type of development in her understanding in the following way:

> [I learnt] over years through trial and error ... Taking someone back [from recovery] who started to bleed almost as soon as they got to the ward ... Who wasn't strong enough to transfer to a bed [from the trolley]... Who was in awful pain ... All those things, little errors, made me think about my assessment of a patient in the recovery room ... [SURGICAL 5/D/5&6]

These nurses continued to follow a routine, but were more aware of what signs to look for and understood the relevance of these signs to the patients' condition. They had begun to complete the routine tasks and observations while considering the physical, psychological, social and cultural needs of the individual. A nurse working in gynaecology described an increasing understanding of the patients cultural needs:

> Nursing Gurkha ladies, they don't like you looking at private parts of the body. Trying to assess PV loss you have to use a bit of initiative ... They look themselves and they tell you ... I take the person into account first in assessment, the person will tell you they are not well a long time before the machinery will . [SURGICAL 5/I/3]

The cardio-thoracic and general ITU nurses completed the routine observations and tasks required in the care of post-operative patients. Some maintained this routine approach to their care demonstrating awareness of clearly abnormal clinical signs in the post-operative patients. Others who were motivated to learn from their experiences sought to interpret the relevance of a subtle combination of clinical signs within the patient's unique situation. One of the nurses described the experiential development of her awareness of signs thus:

> I had input from lots of different people and you sift your way through what was important and what wasn't or what worked for you and what didn't. [ITU 1/M/3]

These competent ITU nurses had learnt to utilise a routine approach which accommodated the surgeon's requirements in the management of patient care. Learning from their experiences led to increased responsiveness to the patient's clinical signs while continuing to focus on the medical orders of care. One nurse described her care of the patient in the following way:

> It becomes a routine. It doesn't vary. The only difference is ventilation. You tend not to look as often at the breathing when the patient is ventilated. When they are not [ventilated] you check more often. Each patient is an individual and each surgeon will vary ... You know what the surgeon likes or doesn't like ... You do what he wants within reason.
> [ITU 1/K/2&3]

The impact of the knowledge gained through the ITU course was noticeable in the nurse's ability to apply a 'systems' approach to patient assessment and interpret the significance of clinical signs. These nurses found they were able to follow a routine of care and had developed the knowledge with which to interpret the observations gained to reach some judgement of the patient's condition. A nurse described these changes:

> The ITU course makes you feel more confident and you understand to a greater degree the physiology of what's happening. And the proposed treatment and what it will do ... If something goes wrong you have more of an insight into what's happening. [ITU 3/F/5]

INCREASING AWARENESS AND RESPONSE SKILLS TO THE PATIENT'S SIGNS: THE PROFICIENT NURSE

Nurses at the proficient level utilised a flexible framework to structure their approach to patient assessment and care. Their assessment of patients was perceived to be natural and without the need for conscious effort. These nurses were flexible and responsive to the clinical signs found in the individual's situation. They were able to assess and initiate interventions earlier to maintain the patient's safety and stability. Their approach was perceived to alter as a result of increasing knowledge gained from post basic courses, teaching by others and previous experiences.

They recognised the specific signs indicative of the likelihood of uneventful recovery or potential problems for patients undergoing similar surgery. These nurses had theoretical/experiential-based rationales for each aspect of the patients' post-operative assessments. If clinical signs of concern were noted at any stage of the assessment, then action was begun immediately. Assessment of other measurable clinical signs which were considered less important were continued at the earliest opportunity following the stabilisation of the patient. Examplars are included of the influences which led to the increasingly flexible and responsive skills exhibited by surgical ward and ITU nurses at the proficient level.

Surgical ward nurses at the proficient level had developed an increased awareness and responsiveness to patients' signs. They had few opportunities to develop these skills through specialised post-basic courses. Instead, most learnt through the experiences of working with a patient group within their

field of practice. One of these nurses described the qualitative changes which occurred over time in her assessment of post-operative patients thus:

> You go through a mental assessment of how they are ... Text books [tell you to] go through airway, breathing, circulation, the post-operative care. [But] It's important not to be rigid you have to be quite flexible and appreciate that its a framework ... Certain people will have different needs ... Its important ... you know what you're assessing, why you are assessing it ... There has to be a certain order for it to be safe. But not be confined by it. [SURGICAL 4/E/6&8]

These nurses developed a framework for patient assessment predominantly through a combination of teaching by others and/or previous experiences. Specialised post-basic courses provided some nurses with knowledge which underpinned their increased responsiveness to patients' clinical signs (e.g. ENT and gynaecological nursing). A nurse described the increased flexibility of his assessment of patients in the following way:

> Knowing what to watch out for, what to expect, what could go wrong with a client who has had this surgery ... Things you need to be aware of that could be a problem. It's not until you've seen them that you can anticipate what to look out for. Reading in a textbook doesn't give you the experience of having seen it. [SURGICAL 2/E/2&3]

The ITU nurses utilised a flexible framework to assess the unique needs of the patients in their field of practice. They were able to prioritise activities to complete a comprehensive assessment and provide safe patient care. Their skills in creating a flexible assessment process were perceived to result from knowledge and skills gained from ITU courses and experience. These nurses had the ability to recognise salient clinical signs in the patients without conscious effort. They were also able to maintain concentration on their assessment of the patients while carrying out a variety of technical procedures, aspects of care and interactions with other health professionals. Proficient level nurses searched for clinical signs beyond those listed in the guidelines to gain a greater understanding of the patient's condition.

The ITU courses provided a basic and standard approach to assessment upon which proficient nurses developed as their knowledge deepened in their area of practice. One of these nurses described how the structured framework for patient assessment taught in the ITU course had become adapted through his increasing knowledge and experience:

> The course set guidelines on how to assess the patient I wouldn't just religiously go through what I was taught but keep in the back of my mind the system and at the same time take special interest in what is going on around me ... I appreciate other people [at the patient's bedside] are trying to do their work too, it's a matter of adaptation to what [guidelines] you have been taught. [ITU 1/S/6&7]

These nurses found past experiences where risk of death or respiratory embarrassment had occurred highlighted the importance of a flexible but comprehensive approach to patient assessment to be ready for swift action. One of the nurse's described experiences which underlined the importance of a flexible approach to patient assessment:

> It's an approach that guides but you can't always do that approach ... Once someone put the ECG leads on meanwhile the [patient following CABG] was tamponading ... You can get a good ECG without having blood pressure and the patient was starting to expire. So I do the arterial pressure first then the ECG then the CVP and secure the [ET] tube. Again [the latter was] from experience. By the time we checked the ventilation and the chest [movement] the tube was half way out. Where the patient gets quite ill on immediate arrival you have to prioritise what you do. [ITU 1/N/2]

The knowledge and experience of these nurses provided the understanding that guided the flexible nature of each individual assessment and patient care. Consideration of the importance of cultural and religious aspects in the lives of patients and their families illustrated the flexible components of the skilled nurse's assessment. As one nurse noted:

> You have to be aware of their spiritual faith. These patients are Muslim. I remember when this patient arrested and the priority of the patient's family was to have the bed facing toward Mecca. They were turning the bed while we were resuscitating the patient. Once the bed was positioned at the right angle they were happy for us to carry on. We should give respect to any religion. It is very important. [ITU 1/S/11]

Their knowledge and experience guided the nurses in the prioritising of components of the assessment to provide safe and effective care. One nurse reflected on the experiences which highlighted for her the essential aspects in the assessment of the post-operative patient:

> [I observe] airway, breathing, circulation at the same time ... Patients come who haven't been breathing in air ... They might be fine leaving theatre, [but that] doesn't mean that they are going to be all right when they are coming down the corridor ... It's very important to [be ready to] immediately intervene ... You learn in training but when you experience it you really understand it. You see problems that are associated with poor

> airway and breathing you realise that the books fit in and help you make sense out of what's been said [by the doctors]... Through experience I've really seen the importance of the way I assess patients. [ITU 3/E/2&3&4]

FLEXIBLE RESPONSES TO THE PATIENT'S SIGNS: THE EXPERT NURSE

This group of nurses had adapted the systems and priority approaches of structured post-operative care to flexible and individualised assessments of their patients. The sequencing of tasks and observations were directly related to the nurses' judgement of the relevance of the patients' clinical signs as a result of their knowledge and experience of patients undergoing similar surgery. They also considered the overall status of the patients and identified their needs through expert clinical judgement. These nurses were totally flexible but remained systematic in their approach to assessment of the patients. They based their assessment of the current information, observations and clinical signs of individuals on a deep theoretical and experiential knowledge of patients undergoing similar major surgery. Examplars are included of surgical ward and ITU nurses who demonstrated this level of flexibility in their approach to the assessment of their patients.

One nurse's flexible overview of an individual's situation compared to the text book structure of post-operative assessment is noticeable:

> Circulatory and renal perfusion, respiratory status, they all go together. If his pulse is regular, not tachycardic and he looks well perfused, I'm not going to worry about that for the moment ... I don't particularly like the idea of going through the same post-op routine every time like a robot. That's not the case at all. It depends very much on the information. It's an overall impression, you put the whole lot together ... The nursing books are segmented. They don't throw the whole lot together and give you an overall view.
> [SURGICAL 6/B/2, 3&4]

The flexible structure of the nurses' assessments were directed by their judgements of the clinical signs of each individual. The surgical ward and ITU nurses were very familiar with the structured care plan approaches to the post-operative assessment of patients. They utilised the systematic structure in collaboration with their deep knowledge of the patient's needs gained from experience, post-basic courses and ongoing education. The flexible structure of these skilled nurse's approaches was based on deep understanding and alert responsiveness to significant and specific clinical signs of the patients. One nurse summarised her flexible and comprehensive approach thus:

> I'm conditioned to our care plan, Mead adapted from Roper's model and the nursing process, but I'm not stuck within a rigid framework relating to the care plan ... When you do a cardio-thoracic course, you get a lot of knowledge because you follow your patient from admission to discharge, and theoretical knowledge ... You go to theatre, watch the bypass in progress ... You get an overview of all that it entails ... In the clinical environment again you've got a background of the recalled experience and knowledge. How you expect the patient to react and what to look for. You think of all the possible things that could occur and you keep those tucked away and look out for them ... Your care plan's not going to tell you those things, You have to know what you are looking out for. [ITU 1/C/1&4]

The systems or head-to-toe assessment approaches used by many of the course educated ITU nurses were tempered into flexibility by the expert's experiences in practice. These nurses had deep contextual knowledge gained from careers full of learning from others, continuing education and their own experiences. They responded to the significant signs of the patient without conscious thought. A natural process occurred in which the nurses immediately checked other potentially related clinical features to complete their assessment and confirm their clinical judgement of the patient. One nurse described the development of her flexible approach thus:

> We used to buddy up as new people with experienced nurses to observe, to be talked through it. Afterwards to go through, what the rationale was behind what you were doing, what you were looking for. If it was abnormal, why and how you could correct that ... Then I did my ITU course, I was taught to do a systematic assessment from top to bottom ... He's unconscious, he's had an anaesthetic. He's not breathing, he's ventilated. I'm going down the chest, his heart, his blood pressure, his rhythm, renal, has he passed sufficient urine? Is he in any immediate danger, what needs actioning first? You make your priorities ... What draws your attention ... and deal with that ... Then you're constantly changing your priorities as to what the patient's needs to keep him safe and stable.
> [ITU 1/P/2&6&7]

SUMMARY OF THE MOVEMENT OF NURSES ALONG THE RIGIDITY - FLEXIBILITY CONTINUUM IN PATIENT CARE

Nurses progression toward a flexible approach to the assessment of patients appeared to be dependent upon the synthesis of knowledge gained through continuing education and from extensive and regular experiences in practice. The nurses were introduced, in the main, to a structured approach to post-operative care in pre-registration programmes. The class work and experiences in the wards led them to use post-operative charts as guidelines to

care. They were introduced to the nursing process but were not taught a structured approach to patient assessment or to formulate clinical judgements of the condition of the patients in their care. Instead, they examined the observations of the patient against the parameters set by the medical staff.
Thus nurses at the advanced beginner level followed the set guidelines of post-operative charts or plans recognised from their student days. They made only the most basic of assessments, recognising obvious relationships between clearly abnormal observations and deterioration in the condition of the patients. However, they had gaps in their understanding of subtle changes apparent in the patients' conditions. Their attention remained on 'doing the job' which was seen as completion of the list of observations, tasks and orders noted in the guidelines of the patient's post-operative care. They were not able to deviate from the structured guideline to search for other associated clinical signs to make a judgement of the condition of the patients.

However, as the nurses' expertise increased, so did the flexibility of their approach to care and in particular the assessment of patients in practice. The rigid nature of their approach to care did not change dramatically if the nurses experiential knowledge alone deepened. This form of knowledge provided a competent ability to recognise similar changes in a patient group and therefore likely outcomes in care. The competent nurses, through a mixture of learning from others, their own experiences and some post-basic education, had learnt to recognise the significance of some clinical signs in the patients and respond to them. Some nurses were able to progress beyond this point through the development and application of theoretical and experiential knowledge in practice. Progression depended on the availability of skilled clinical teachers, post-basic courses in their field and sustained interest in learning from their own practice.

The proficient nurses with sound and current knowledge were able to recognise the relevance of clinical signs in their patients. They would alter their activities to complete their assessment of the stability and safety of the patient's condition. The nurses would be flexible in response to recognition of warning signs witnessed in similar patients in the past. The nurses' in-depth theoretical knowledge aided their recognition of what was potentially happening to the patient within the context of their current situation.

The expert nurses were comprehensive, systematic and totally flexible in their approach to care depending on the clinical signs they found in the patient. The patient's clinical signs were more or less important, depending on multiple interconnecting factors within the context of their situation. The nurses drew from their knowledge of other similar patients, surgical procedures, the likely outcomes of the surgery and their knowledge of the person as an individual. Their approach became responsive to the signs they noted and they prioritised accordingly within the patient's assessment and care.

Thus the nurses' knowledge and style of teaching had major ramifications for others learning approaches to patient assessment in practice. Competent nurses depended upon the routine orders of care with some interpretation of clinical signs impacting on their practice. The experts used their in-depth knowledge and experience in combination with the observations taken of the patients to respond in a flexible fashion to identify their current needs. Thus, nurses did not develop flexible responses to the needs of patients in practice without access to continuing education and learning from experts within their field of practice.

CHAPTER SEVEN:
`FROM STUDENT LEARNER TO TEACHER IN PRACTICE' - A POTENTIAL INDICATOR OF DEVELOPING EXPERTISE

INTRODUCTION

Observation of practice and examination of the transcript data revealed clearly identifiable levels of functioning on a dynamic learner - teacher continuum of practice. Qualitative differences emerged from the data which suggested these four levels of functioning reflect levels of expertise. This continuum reflected a range of ability from functioning as a learner to the role of knowledgeable teacher in the context of clinical nursing practice. The relationship between expertise and level on the continuum can be expressed as follows:

- Learner in practice: the advanced beginner nurse
- Learner and emerging teacher: the competent nurse
- Effective teacher and occasional learner: the proficient nurse
- Knowledgeable teacher: the expert nurse

Nurses at the advanced beginner level were characterised by the need to learn from others to improve and develop their knowledge and skills in the assessment and provision of patient care. Competent nurses displayed characteristics of the learner and emerging teacher of aspects of practice. They continued to develop knowledge and skills from other health professionals, post-basic courses and through their own clinical experience in practice. Confidence to teach others grew simultaneously with increasing knowledge and clinical skills in their field of nursing care. Nurses identified as proficient generally showed deep knowledge and clinical experience which they drew upon to teach others. However, they still sought to learn of recent changes affecting patient management from expert nurses. Expert nurses demonstrated the depth and breadth of knowledge and skills needed to function as knowledgeable teachers within their sphere of practice. Their theoretical and practical knowledge provided the underpinning for their teaching of nurses and other health professionals in every aspect of patient care management.

The four levels from advanced beginner nurse as learner to expert nurse as expert teacher were dynamic in nature. The nurses' levels on the continuum were dependent on their knowledge of the field of practice at that moment in time. Several factors were highly influential in their development as confident and knowledgeable teachers in clinical practice. The model of learning the nurses had been exposed to during practice was an important factor. Their motivation to learn from experiences, from others and through post-basic courses also had a powerful impact. The nurses' confidence in the depth and breadth of their knowledge of the field of practice were also highly influential factors. Examplars from surgical ward and ITU nurses illustrate the impact of these factors on the potential development of nurses from a state of learning to functioning as expert teachers in clinical practice.

LEARNER IN PRACTICE: THE ADVANCED BEGINNER NURSE

Qualified nurses entered the work place with sufficient knowledge and skills with which to provide basic nursing care. These nurses functioned effectively as learners seeking to gain knowledge and understanding through participation, observation and discussion of aspects of patient care with other health professionals. The guidance provided by knowledgeable and approachable nurses heavily influenced the advanced beginner's development of practical knowledge in complex patient care and was highly valued.

The model of teaching utilised by these nurses had a lasting impact on the manner in which the advanced beginners developed knowledge throughout their careers. Autocratic teaching styles were perceived to limit learning and knowledge development. Nurses were taught routine tasks of care as a series of time-based practical skills through this method. As a result those beginners were forced to learn through their own trial and error experiences.

Alternatively, expert nurses who taught using models of reflection on practice facilitated the beginner's use of this learning approach throughout their careers. They learnt to draw on their theoretical knowledge and clinical experiences to assess, interpret and make clinical judgements within the context of the patient's situation. These nurses also shared narratives from previous care which provided useful practical knowledge for the beginner's clinical practice. Skills and knowledge learnt in these ways were incorporated into the beginner's understanding of how to care for patients and teach others in their field.

The beginner nurses were aware of their need for greater biophysical science knowledge (e.g. anatomy, physiology, pathophysiology and pharmacology) to assess the patient's needs effectively. They also sought more detailed knowledge of the surgical procedures, likely outcomes and potential problems that may be faced by post-operative patients in their field. These influences on the surgical ward and ITU nurses which led to their functioning as learners in practice are described, using examplars, in the following section.

The nurses described the need for support and informal teaching at the bedside by skilled nurses. Their actions and approaches in patient care were based on those found in more experienced nurses working in the same patient area. A nurse described seeking to learn new skills within her practice thus:

> Somebody that I like, that I get on well with, somebody more senior with much more experience ... I watch people and pick up little snippets that they do and you think that's useful I'll remember that. Each little snippet from each person goes to better your care. What appeals to me is their expertise, their knowledge ... They are good at what they are doing ... I think, I can use that knowledge for myself ... People develop by watching and learning. [SURGICAL 2/K/5&6]

The inexperienced ITU nurses found the approachability and knowledge of the skilled nurses essential to their learning of basic practical skills and the theoretical rationales that guided each aspect of care. As one nurse remarked:

> I've watched, they've said things. I've taken it in and incorporated it ... They taught you things that you didn't know. Things that are really important, that stick in your mind. Simple things that help ... Once they started teaching you could draw more out of them. [ITU 1/G/5&6]

The beginner surgical ward and ITU nurses recognised the need to learn from post-basic courses, more experienced nurses and their own experiences to develop their knowledge for practice. These nurses had not yet had the opportunity to complete post-basic courses. Without that theoretical knowledge they were dependent on others to teach them the rudiments of specialised practice. As one surgical ward nurse noted:

> I need to attend courses to bring up my knowledge to inform the practice that I will be giving. I need more clinical practice and support, learning from peers ... I need to increase my knowledge, especially more about vascular surgery. [SURGICAL 4/C/5]

A beginner ITU nurse noted the same basis of her learning and the need for further theoretical knowledge through post-basic courses:

> I haven't done the course yet ... I have to go from what I've been taught and what I have picked up in practice. [ITU 3/J/4]

The nurses recognised the importance of developing phamacological knowledge for use within the field of patient care. An inexperienced ITU nurse caring for patients undergoing cardio-thoracic surgery described her need for greater knowledge of specific drugs:

> I'm not confident. The cardiac drugs, I'm getting to know them better, but there's probably a lot I don't know about them as well and with new one's coming up all the time. I just need more experience and to learn [about] them. [ITU 1/G/9]

The beginner ITU nurses carefully followed the directions of the experienced nurses who taught at the bedside. They learnt by a combination of observation, participation and explanation of patient care. Subsequent analysis of patient care episodes with more experienced nurses prevented the beginners from mimicking without understanding the rationales of care. The interpersonal and teaching skills of the experienced nurses had a powerful impact on the learning of this group of nurses. The nurses were less inclined to ask questions and discuss issues to deepen their understanding if the clinical staff were unapproachable or uninterested in teaching. One nurse summarised the impact of an unapproachable nurse on her learning in the clinical field:

> Somebody that's not approachable. I can learn by observing them, but I wouldn't be inclined to have an in depth conversation with them. I'll ask little off-hand things because it's beneficial to my patient what they know and I don't know and I have to find out. But I only do it for the patient, not for me [to learn from]. [ITU 1/G/5&6]

FREQUENT LEARNER AND EMERGING TEACHER: THE COMPETENT NURSE

The knowledge, skills and confidence of competent nurses had increased through learning from others, clinical experience in their field and/or by pursuit of further education. There was an understanding and expectation that they had sufficient knowledge to guide and teach less knowledgeable and experienced nurses. However, nurses at the competent level did not have the in-depth theoretical knowledge and experiential understanding demonstrated by nurses who were recognised as experts within the field.

Competent nurses as learners who were emergent teachers in practice could be divided into two groups. The first group included motivated nurses who sought to develop knowledge from their own experiences, from others and from post-basic courses. These nurses used the most effective teaching styles they knew to teach other less experienced nurses. Conversely, the second group included nurses with less motivation and interest in their field of practice. These nurses did not actively pursue course or clinical learning opportunities that arose with more experienced practitioners. They were also more reluctant to capitalise on moments in practice to teach what they knew to others. The following examplars demonstrate the influences on these surgical ward and ITU nurses as learners and emerging teachers of beginners within their clinical field.

The nurses'experience of learning had a powerful and lasting impact on their approaches to teaching within clinical practice. Some of them had been taught post-operative care according to task oriented procedures. One of the nurses recalled her limited learning from this style of teaching:

> It was drilled into you by fear of being shouted at which I don't think is particularly conducive to learning. You know, 'maintain your observation, keep your fluid balance up to date.' So you're always thinking of charts really.
> [SURGICAL 2/F/6]

The nurses developed knowledge and skills which they utilised in practice under the influence of more experienced nurses. Some of the nurses experienced a facilitative process which allowed the nurse to learn and master skills in a steady progression of complexity. The nurses learnt complex technical skills, theoretical and practical knowledge in a supportive and safe environment of patient care. They then felt confident to teach from their own increasing knowledge base aspects of patient care. A nurse described this developmental approach thus:

> The way you learn, it's a gradual process. You start with somebody stable on a ventilator and then build up to somebody who is unstable on a ventilator, to people who are extremely sick ... I was not left looking after somebody that I felt .I wouldn't be able to look after. I was guided well .
> [ITU 3/G/10]

The dual roles of learner and teacher were clearly shared by this group of nurses. The importance of continuing education to advance their practice, ward management and teaching was recognised and sought after by motivated

nurses. At the same time they were conscious of less experienced nurses learning from their own knowledge and practice. One nurse described the pathway of learning she needed to pursue to develop as a teacher and practitioner:

> I need more G.I. knowledge, a Stoma Course, management and definitely teaching skills. More on the medical side [gastro-intestinal] ... What we learn in school is okay, but I'd like to learn more. Specially for teaching, knowing what was going on, so I would know what the patient was going to be like. [SURGICAL 6/C/9&10]

Similarly, an ITU nurse explained the need for further learning to increase her knowledge for teaching and practice in the following way:

> I should improve on my teaching skills. If I was a more confident teacher then it would confirm my knowledge for me ... So often questions crop up that you never even thought about, and you wind up by learning it so much better by trying to teach someone else. I also need a lot more management experience. [ITU 1/M/9]

The ITU nurses relied on more experienced nurses to assist them to apply theory to practice as teachers at the bedside and through unit lectures. The knowledge gathered by these nurses depended upon the level of the teaching nurses' clinical skills, knowledge and expertise and their ability to impart that knowledge to others. One of the nurses reflected on the development of her knowledge through this form of teaching:

> There were teaching programmes in Intensive Care. I learnt a lot and working with somebody, they go through everything they know ... I didn't actually learn much [about patient assessment] from books, more from practical teachers really. [ITU 1/L/2&3]

They continued to learn from the knowledge and skills of other skilful practitioners and incorporated new understanding within their own practice. As one nurse noted:

> I've picked up a lot from people whose ideas you like to follow, who do things to a high standard. I love working with (RN's name), she's fantastic, logical, does everything efficiently and without compromise ... I have learnt a lot from her. [ITU 1/E/3&4]

Many of the nurses believed the knowledge obtained from post-basic courses, strong on biophysical science content and specific to their field of care, would

elevate their level of clinical expertise. However, these courses needed to be accompanied by participation, observation and discussion of care with more experienced nurses to provide the knowledge required for teaching and advancement of practice. A competent nurse commented on the knowledge to be gained from a post-basic ITU course:

> I want to do an ENB 100 ITU course ... The ones that have more medical, anatomy and physiology input seemed to be enjoyed more and [the nurses] tend to be more knowledgeable for some reason. I know that's not the way it's supposed to be going in nursing education . [SURGICAL 4/D/3&10]

Nurses working with patients experiencing gynaecological difficulties, for example, found post-basic courses which included counselling and communication skills to be influential in the development of their practice. These nurses felt they needed to acquire skills for teaching and discussion of sensitive subjects involving body image, sexuality or reproduction with women. One nurse described her need to learn thus:

> I feel I would function far better as a competent gynaecological nurse if I could do the courses in counselling and communication skills. [SURGICAL 5/E/15&16]

Motivated nurses sought short courses, in-service lectures and reading to deepen their understanding of recent changes in their field of post-operative nursing care. As one nurse commented:

> I need more theory. I'd like to go to more courses and more lectures and have more regular teaching. .The surgery and care is changing so quickly . [ITU 1/O/8]

Alternatively, some nurses were content with the level of theoretical knowledge reached through informal resource networks and clinical experience within the wards. These nurses chose not to pursue further courses within their current sphere of care and often expressed an interest in other fields. One nurse described her shifting interest in the following way,

> The more senior you get, the more you've got the knowledge. If you just want it [the qualification] as a piece of paper, do (the gynaecology course). It might bore me ... There would be things I would learn from it but I have got so much experience. I don't feel that is what I want to do ... I'm at the end of a six month HIV course at night school in college ... I'd like to eventually work in an STD clinic. [SURGICAL 5/A/12&13]

Nurses who were no longer interested in full-time clinical practice were less interested in completing post-basic courses within the field. They were also not observed in the action of teaching others and did not discuss this component of their role in practice. A nurse working part-time who was not interested in post-basic courses within the field, noted:

> It's the gaps that make the difference. .I know the knowledge and the experience is there, but I'm slower than I used to be. There's nothing that shows. I'm just aware that I haven't been doing it for a while. My mind's been on other things ... If I wanted to develop I'd come back to the clinical area regularly. I don't think I need a course. I think one can do study without doing a course, but a course just makes you do it. [ITU 1/L/8&9]

EFFECTIVE TEACHER AND OCCASIONAL LEARNER: THE PROFICIENT NURSE

Nurses at the proficient level had reached a high level of confidence, skills and knowledge, and acted as practical teachers within their spheres of practice. Many of these nurses occupied vitally important roles as clinical teachers, nurse tutors or preceptors to students and less experienced qualified nurses within their clinical field. These nurses were very knowledgeable clinical teachers, but were still occasional learners of the most recent changes affecting patient management from recognised experts in the clinical field.

Several factors influenced the ability of these nurses to function as effective teachers in practice. One powerful influence was the mode of learning they had been exposed to throughout their nursing careers. A further influencing factor was the opportunity to learn alternative teaching approaches through post-basic teaching courses. Examplars are given below of the surgical and ITU nurses experiences of learning and its impact on their teaching of other nurses.

Three teaching styles affected the nurses ability to be, in turn, effective teachers of others in practice. The first approach incorporated an autocratic and pedagogical teaching style through which many of these nurses had been taught procedures of nursing care. As one nurse commented:

> It was very different to the [clinical teaching] set-up now ... Whenever anything was going on you were dragged along ... It wasn't formal. It wasn't 'right, I'm your mentor or your facilitator and this is what we are going over today' And 'what

> do you think you have learned from it'. It was 'right this is how we do it, this is why we do it and this is what works' ... It was quite autocratic teaching really. [SURGICAL 4/E/10]

The second approach involved learning from skilful experienced nurses who taught by exemplary practice in the clinical field. One of the nurses described the importance of knowledgeable practitioners to the development of her current practice:

> [When I was] a junior Sister, a Sister I worked with was extremely efficient, very knowledgeable,very quick. She had a good knowledge of anatomy and physiology and experience. She could assess very quickly, knew exactly what to do. She'd call on medical aid very expertly ... Although I thought I had a lot of skills, I watched how she put them together and my work now is very similar to the way she worked. [SURGICAL 2/A/4]

The third approach to learning required the nurses to develop knowledge and a teaching style based on theory and their own clinical experience. As one nurse recalled:

> I remember lectures, but not being taught at the bedside ... The methods of teaching people have changed quite dramatically. If I work with students, I teach them how to set about it. I don't actually remember being taught that way myself. [ITU 3/G/3]

These nurses had deep experiential understanding of how to assess patients accurately in practice. However, theoretical knowledge was also required to provide a full explanation of a complex patient situation when teaching less experienced nurses. One nurse described the effort required to maintain the knowledge and skills needed to teach effectively:

> You need a good understanding of your field, post-basic studies in the area. Continuously updating your knowledge, conferences to maintain your care ... You must teach so that you are using and sharing your knowledge ... Teaching expands your knowledge and develops [the learners'] care.[ITU I/S/13]

The nurses drew on their theoretical and experiential knowledge and teaching strategies gained from post-basic courses to enhance their teaching of others during practice. They were recognised as effective teachers because of their in-depth knowledge of the field. The increase in their knowledge from courses and experience meant that these nurses could give clear rationales for

practice to less experienced nurses. A nurse noted the change in her ability to teach as her own knowledge was enhanced:

> I have more knowledge than I did before [the ITU course] and that made me look close at why I was doing things ... I know now the importance to teach junior staff and students. I can explain exactly why and point out the importance of good assessment to them. [ITU 3/E/5]

The nurses also sought to learn skills for unit management of patient care. These skills could be developed by trial and error or by learning through the facilitation of nurses employed in clinical management posts within the units. A nurse described the effectiveness of learning management skills from experienced others in a protected and supportive teaching environment thus:

> When you have senior nurses on, there's a good chance to teach and learn. Allow a senior nurse to take charge when there is good strong backup behind her. So that if she does make an error or if she has missed something, somebody can guide her along the way and say you should pay more attention to this or that's your priority in this situation ... Being dumped in the deep end when there isn't anybody else to take charge is a terrible way to learn. [ITU 1/S/12]

KNOWLEDGEABLE TEACHER: THE EXPERT NURSE

Nurses at the expert level had gained extensive practical and experiential knowledge from years of clinical experience. They were confident in their knowledge and skills and frequently taught others by example without verbal explanation of the thinking behind the practice. Many had been involved in clinical practice for over ten years and had been taught by watching more experienced nurses in this fashion. However, their approaches to teaching had changed under the influence of ongoing education, which incorporated teaching strategies for clinical practice.

These nurses described the synthesis of personal experiences and knowledge gained from continuing education within their clinical practice. This form of knowledge was used to teach less experienced nurses how to assess patients returning from theatre. They utilised both theoretical and practical knowledge when asked to explain rationales for aspects of practice. These nurses were highly motivated and committed to maintaining comprehensive, up-to-date theoretical knowledge, through continuing education. They read relevant journals, attended post-basic courses, conferences and study days to maintain

their knowledge of their field of practice. Examplars are given below of surgical ward and ITU nurses descriptions of influences on their learning and their current teaching roles with nurses working on their units and wards.

Nurses at the expert level were also profoundly affected by the ways in which they had learnt skills and knowledge in clinical practice. Learning from other nurses was an important factor in their knowledge development and affected the way in which these nurses approached teaching others. As one nurse recalled the experiences of learning from a skilled nurse by participant observation and questioning rationales for practice:

> A very good Sister, years ago, still sticks in my mind ... She would show you how to admit the patient from theatre ... How to do things easily, to avoid problems ... She taught me about ECGs and all of the treatments. She taught me how to assess from head to foot ... She would always say , 'look and assess the patient with your eyes'. I've been using that method since I learnt from her . [ITU 1/T/4&5]

ITU nurses who had been registered for longer than ten years described how much of their learning occurred through a trial and error approach. Many of the nurses had in the past taught without sharing the rationales for practice with the learning nurses. They in turn utilised the same approaches to pass information on to inexperienced nurses unless taught to use other teaching methods through courses or through the guidance of other senior nursing staff. A nurse described experiences as a learner and later as an educated teacher thus:

> I wasn't actually taught, you did it and then you found that didn't work so you did it another way. Or you watched somebody but you didn't immediately find out why they did it that way. Then I did an ITU course ... If I teach someone now, I put a lot of emphasis on helping them to understand why they need to know ... I'm doing a teaching in adult education course one day a week and paying for it myself, it's good and I'm enjoying it. I wanted to learn to teach effectively.
> [ITU 1/F/4&12]

These nurses had attained a great depth and breadth of knowledge and experience which informed their understanding and led them to make accurate and swift decisions in patient care. This synthesis of theoretical and experiential knowledge produced the attention to salient details of the patient arriving from theatre that needed to be developed in inexperienced nurses. The difficulty in sharing the knowledge which informed the skilled nurses' clinical judgements was noted by many. Articulating that knowledge to help

nurses learning from practice was a skill which was often made easier by teaching courses. As one nurse observed:

> It's quite hard to transfer or to teach that knowledge. It's something that you gain after having taken back hundreds [of patients]. You become more intuitive from experience.
> [ITU 1/O/8]

These skilled nurses, having learnt to use effective teaching methods, were able to share with less experienced nurses their understanding of the salient clinical signs of patients which led to their decision-making in practice. One nurse's understanding of how to assess a post-operative patient was channelled into the teaching of a less experienced nurse in the following way,

> After years and years you become confident in what you are doing. I can make a very quick assessment through my experience. If they are bleeding, in pain or there's something radically wrong, you can tell by speaking to the patient, or you can see by the colour of their skin and the visual observations that you put into force ... I always try to teach others how to make an observational assessment.
> [SURGICAL 5/C/2&3]

These nurses had learnt to analyse episodes in patient care to develop knowledge for similar situations in their future practice. A nurse described her approach to analysing her decisions made during patient care thus:

> To be able to self criticise, self analyse, be aware of your own mistakes, look back, reflect over situations and think, 'I didn't handle that very well, I ought to perhaps have done that, maybe it would have been better if I had reacted like that'. I think to be able to do situational analysis is a good thing a positive thing, it teaches you. [ITU 1/P/17]

Many of these highly motivated nurses had completed post-basic courses, certificates in education and/or held teaching posts and endeavoured to facilitate learning as expert teachers in the clinical field. They sought to assist the nurses' learning of practical skills, assessment and interpretation of the patients' clinical signs to make accurate clinical judgements for care. These nurses were able to inspire the learners as well as teach the knowledge which underpinned advanced clinical skills of nursing care. One nurse described this commitment to teach others in the following manner:

> I've done a teaching and assessment course .and put together some teaching packages. . I try to keep everyone motivated and updated and help them look at their patients. For example thinking of not just one but three or four reasons for

> tachycardia, and then looking at the supports the patient's on and then encouraging everybody to interpret what they're seeing, not just writing everything down. [ITU 1/C/6]

The nurses used the patients with real life problems within the context of their care to teach other nurses and thus deepen and extend their knowledge within their practice. The same nurse described her use of interesting and unusual occurrences in patient care to teach others:

> I try to teach other nurses .by example ... A baby who came back from theatre ... with a blood sugar of 17 which then went up to 44. Explanation, hypothermia reduces the production of insulin by the pancreas and therefore there wasn't enough insulin to correct the blood sugar. We had to help the baby for a short period on an infusion, and then everything came back to normal and he produced Insulin ... That's just a symptom of mechanical bypass [in cardiac surgery]. [ITU 1/C/6]

The outstanding abilities of the skilled nurses were observed by others and incorporated within the learner's own practice. The nurses' clinical knowledge continued to grow through consideration of different ways of handling new and unique patient situations. A highly skilled nurse summarised the influence of teachers in her past and current practice as follows:

> When I was learning, I looked at experienced Intensive Care nurses and saw how they handled things. Not just from text books and courses. The actual nifty skills they do and the way they phrase things . If somebody you admire does something very smartly you want to do it like that. And that's a big influence as much of an influence as anything else. You learn from them and you watch how other people act ... Even now I look how the senior sisters act and think, see how they handle situations. [ITU 1/A/8]

SUMMARY OF NURSES' MOVEMENT ALONG THE LEARNER - TEACHER CONTINUUM IN PRACTICE

Several factors impacted upon the development of nurses' abilities to function as knowledgeable teachers. The first group of factors pertained to the development of their theoretical and experiential knowledge in the field of practice. Multiple and regular exposure to patients with similar needs provided the potential for the development of in-depth experiential knowledge. The nurses developed theoretical knowledge of the field through post-basic courses, in-service courses and self directed reading. The accuracy of the nurses' knowledge had vital ramifications for their ability to teach in practice.

The second group of personal factors included confidence, motivation, responsibility and interest which underpinned the nurses' drive to increase their knowledge and teach others in practice. The third group of factors involved the models of learning which the nurses were exposed to during their careers. The major learning modes included good and bad role models in practice, trial and error and teachers who utilised experiential learning models to inform their practice. The teaching approaches used by role models had a very powerful influence on the development of learners' practice.

The autocratic and punitive apprenticeship approach, in which power was seen as knowledge and not shared, was recalled in horror by many nurses who had been registered for over five years. Alternatively, nurses who used androgogical, reflective and facilitative approaches to teach through observation, listening and explanation were much admired and sought after by learners. They practised a non-threatening, graduated learning process which provided the learners with a balance between increasing knowledge and increasing complexity of patient cases assigned to their care. These role models facilitated the application of the learner's increasing theoretical and experiential knowledge through active reflection before, during and after patient care.

The beginners lacked in-depth theoretical and experiential knowledge and depended upon more experienced nurses to teach them the rudiments of specialised patient care. They were keen to go on post-basic courses, to increase their knowledge through their own practice and to learn from others in practice. They found teaching students improved their own knowledge through the articulation of rationales for practice. The beginners depended on the knowledge and ability of other nurses to teach specialist knowledge of the field of practice. They sought nurses who taught from a detailed knowledge-base of all aspects of nursing practice such as pharmacological and physiological knowledge. These experienced nurses needed to be approachable, willing to teach and to give the learners time to reflect with them on these episodes to gain new understanding and insights into the patients' care.

The competent nurses had increased their level of experiential knowledge and developed some specialised theoretical knowledge of their field of practice. These nurses fell into two distinct groups as learners who were emerging as

teachers of the beginner group in practice. The first group were motivated and interested to develop their knowledge through experience and involvement in courses (i.e. practice, teaching, counselling, management, in-service courses and study days). The second group of nurses lacked motivation and interest to extend their knowledge base within the field of care. They did not seek to participate in courses or continuing education to increase their knowledge within the field of practice. The latter group taught others within the boundaries of their knowledge, using approaches copied from their role models.

The proficient group were recognised as knowledgeable practitioners who had in-depth understanding of all aspects of clinical practice within the field. These nurses had completed appropriate post-basic courses in their field of practice and/or extensive clinical experience. They sought to learn of the most recent and changing aspects of care and management skills from the experts. Many of these nurses had completed teaching courses which influenced their teaching approach with nurses in clinical practice.

The expert nurses had in-depth theoretical and experiential knowledge of their field from which they taught others in practice. They had developed a form of synthesised knowledge which guided their judgements and actions in practice. Many of these nurses had held teaching posts and completed post-basic courses in their field, teaching and management. They were motivated, responsible and taught others through the use of case studies in practice, unit lectures and teaching packages. These nurses had the level of knowledge which made it possible for them to teach a range of nursing skills from practical procedures to the assessment, interpretation and clinical judgements of the condition of patients in nursing practice. However, their opportunities to teach were limited because of involvement in the management of the wards and units. Clearly there exists an important and relatively untapped opportunity to develop nurses' learning through access to the effective and knowledgeable teaching of proficient and expert nurses.

CHAPTER EIGHT:
`FROM DEPENDENCY TO AUTONOMY IN PRACTICE' - A POTENTIAL INDICATOR OF DEVELOPING EXPERTISE

INTRODUCTION

Observation of practice and examination of the transcript data made possible the identification of four levels of functioning on a dependency - autonomy continuum. While it is recognised that these four levels are not totally discrete, the differences between levels of function are clearly recognisable. Qualitative differences emerged from the data in relation to the level of the ability of the nurses to practice nursing care without direction or supervision. The nurses' levels of expertise were reflected in the level they achieved on the continuum from dependency on the direction and guidance of others in patient care to autonomous nursing practice. The relationship between expertise and level on the continuum can be expressed as follows:

- Dependent practitioner: the advanced beginner nurse
- Growing independence in practice: the competent nurse
- Relative independence in practice: the proficient nurse
- Autonomous practitioner: the expert nurse

Nurses at the advanced beginner level were found to be dependent on the guidance and direction of more experienced staff to provide comprehensive care. They lacked the confidence and knowledge to function independently and sought the direction of others to guide them through the complexities of the tasks and decision-making required within patient care. Nurses at the competent level had gained confidence in their ability to assess and make accurate decisions. They functioned with growing independence and provided care with less frequent supervision than nurses at the advanced beginner level. However, they still sought direction and support from experienced nurses when dealing with complex, confusing or rapidly deteriorating patient situations. Nurses at the proficient level were relatively independent and rarely needed supervision or direction in the administration of patient care.

Nurses at the expert level were able to function as autonomous practitioners in patient care without the guidance of other nursing professionals.

This continuum identified the potential movement of nurses across the four levels from dependency to autonomy in practice. Factors which appeared to influence the development of autonomous practice included motivation, theoretical knowledge (especially from the biophysical sciences), knowledge gained from clinical experience, and the impact of effective role models in practice. A number of factors were found potentially to detract from nurses' maintaining or developing further autonomy in practice. These included a lack of motivation, changing career interests, lack of opportunity to increase theoretical knowledge of the field, limited or irregular opportunities to practice, forced or voluntary moves from field of expertise and limited role models in practice. Examplars given below, involving surgical ward and ITU nurses, demonstrate the impact of these influencing factors on the potential development of autonomy in practice.

DEPENDENT PRACTITIONER: THE ADVANCED BEGINNER NURSE

These nurses expressed a need for the ongoing supervision and support of skilled nurses in assessment, decision-making and management of patient care. They lacked confidence in their technical skills and knowledge and were uncertain and anxious without the professional support, guidance and supervision of skilled nursing colleagues. These inexperienced nurses depended upon others to offer deeper knowledge and make the judgements required for changes in patient care. Examplars are included from surgical ward and ITU nurses who demonstrated their dependence on more experienced nurses to guide their decision-making in patient care.

The need for guidance extended from the nurses' pre-registration student days into their roles as newly qualified ward staff. Nurses unfamiliar with a field felt a strong need to turn to more experienced nurses for guidance, supervision and support in clinical practice. As one nurse observed:

> I felt confident in looking after post-op. patients. There are things that I don't know, but at the same time I know there is always somebody to go to if I don't understand something. If I have a problem with a patient I report it to somebody else or to a doctor ... As long as that goes on, I'm confident.
> [SURGICAL 6/A/10]

Nurses who lacked sufficient knowledge were unable to recognise the salient signs in a patient and make an accurate clinical judgement without the guidance of experienced nurses. One nurse noted her inability to make informed judgements of change in patient situations :

> When you're junior you haven't got as much knowledge or experience. If something slightly different from normal happened, you would be more worried. Unless you had seen that before you wouldn't have the knowledge to deal with it. Therefore making a decision is much harder, which is fine as long as you have got someone to turn to help you. If you haven't, it is quite terrifying. [SURGICAL 5/F/12]

ITU nurses also depended upon the supervision, direction and support of more experienced nurses while learning the technical skills and knowledge required to assess and care for the post-operative patient. One of these nurses voiced her need for supervision in this way:

> I don't feel like I've had enough experience or theory ... I have learned a lot but I think I've got a lot more to learn ... I'm not happy taking back a patient when there's not a Sister around. I'm not happy looking after one patient and someone wants me to take a turn looking after theirs, and there's nobody about. I'm not confident if something went wrong. [ITU 1/G/9]

The lack of sufficient depth of knowledge of physiology applied to practice was perceived as a major cause of deficits in the inexperienced nurses' ability to accurately assess changes in patients conditions and needs. A nurse described her lack of sufficient knowledge of physiology thus:

> A lot of the things I saw and experienced I couldn't really rationalise because I didn't have the knowledge, in particular of physiology. [ITU 3/C/7]

Experienced nurses noted the importance of understanding the related physiology to assess and make complex judgements concerning the patients situation. The beginners did not yet have this level of knowledge to guide their care. An experienced nurse described the limited understanding of beginners:

> You need that theoretical input to understand, for example, if a very inexperienced nurse takes somebody's blood pressure and it drops, they get panicky. They don't think, 'What's the pulse? What's the patient been doing? What does the patient look like? How does the patient feel? They think blood pressure is dropping quickly. Tell somebody. They might be going into shock.' .It's because they don't work through the physiological reasons ... You need quite a level [of knowledge]. [SURGICAL 2/H/8&9]

The experienced nurses provided the knowledge of structure and process for the nurses at the advanced beginner level to follow in nursing care. One beginner described the way she had received guidance from others as follows:

> [Other nurses] give you a structure and then you can develop on that ... It is a slow progression, .somebody says, 'Have you done this?' 'No, I've forgotten that'. You remember next time. Somebody might say, 'Do this first' or 'Do this half way through' because of research or basic common sense ... You remember and incorporate it into your technique. [ITU 3/J/7]

Some nurses remained uncertain and anxious over decision-making in practice due to factors which restricted their development of knowledge. Progression depended on the nurses' opportunities and motivation to develop the knowledge required to underpin their judgements in practice. Nurses who had limited exposure to clinical practice or role models with superficial theoretical and experiential knowledge found progression toward independent practice most difficult. Confidence grew with increased understanding of what was happening to the patients and how best to care for them in that particular situation. Without that development of theoretical and experiential knowledge, the nurses could not give sound rationales for their judgement affecting patient care. As one nurse noted:

> You have to gain your own confidence in your own reasoning for things. You know there is no point in doing it just because somebody has told you to do it. You have to be able to say, 'I have done this for sound reasons, because of this, this and this' [ITU 3/I/3]

GROWING INDEPENDENCE IN PRACTICE: THE COMPETENT NURSE

Nurses at the competent level of this continuum had gained confidence in their ability to provide patient care. Further development of skills and knowledge underpinned their ability to make straightforward decisions and manage all aspects of basic care without close supervision from other nursing or medical staff. However, they continued to consult other nurses with greater knowledge for direction on unusual, changing or complex decision-making which impacted on aspects of patient care. Examplars are included from the surgical ward and ITU nurses which demonstrate their ability to carry out basic care before seeking guidance in more complex patient situations.

Competent nurses had gained sufficient knowledge to make simple decisions about patient care during practice. However, some of these nurses were keen to deepen their knowledge and develop their practice through the guidance of

autonomous experts. The need to confer with more knowledgeable health professionals was noticeable in the comments of a nurse below:

> I'm competent, only fourteen months qualified ... I don't ignore things, I do everything and I act upon what I see. I go to my seniors ... They exude confidence and competence, and that's why you look up to them ... They don't stop thinking and [they] act upon things quickly . [SURGICAL 2/I/10&11]

The nurses' confidence in their ability and knowledge grew with multiple and regular experiences of patient care. They used the knowledge gained from individual's responses in previous situations to inform clinical judgements in their current practice. The nurses increasing confidence in their clinical skills and judgement provided the springboard for independent action in similar patient situations. A nurse described the impact of increasing knowledge and confidence on her ability to respond independently:

> You learn ... Every patient throws something slightly different at you. The more patients you look after, the more you tuck away these little snippets of information, and all of a sudden a situation will arise again and you suddenly think back to what you did the last time instead of looking for help straight away. [ITU 1/M/7]

Experiences of effective decision-making in rapidly changing patient situations reinforced the nurses' confidence in their ability to function independently in patient care. A nurse reflected on the impact of positive outcomes from difficult episodes of clinical practice thus:

> Experiencing situations where people have things go wrong and you have to deal with it ... If you have seen that and dealt with it , you become more competent. [SURGICAL 2/K/11]

Competent nurses were able to manage basic care, but still relied on skilled nurses' involvement to assist their nursing management of patients during critically unstable periods of care. Knowledge gleaned from experienced practitioners, courses and reading provided information essential to the advancement of the nurses' clinical practice. An ITU nurse recalled her previous lack of physiological knowledge and limited ability to act without guidance:

> Knowledge is so important. We are the ones who stay with the patient and interpret the signs, and then get people in to treat it. Without the relevant knowledge of physiology I couldn't detect anything in the first place and had to rely on the direction of others. [ITU 3/C/11&12]

The motivation of the competent nurses to learn and the guidance available from up-to-date, experienced and skilful practitioners emerged as essential factors in development toward autonomy in practice. A nurse clearly described the relationship between effective guidance and motivated learning in the following terms:

> Obviously there has to be .a number of experts in the area and hopefully they are handing down theory and skills to those who want to gain that knowledge and they can point you in the right direction. But you have to have that motivation yourself to further your knowledge. [ITU 3/F/9]

Some of the nurses sought enrolment within specialised post-basic courses to gain theoretical knowledge (especially of related biophysical sciences) and confidence through practical experience in the specific field of patient care. One nurse reflected on how aspects of knowledge, obtained through an intensive care course, strengthened her growing independence in practice:

> The ITU course gives you insight when things do go wrong that you feel more confident and you understand to a greater degree the physiology of what's happening. And the proposed treatment and what it will do ... If something goes wrong you have more insight into what's happening. [ITU 3/F/5]

Nurses within the vascular surgical ward did not have post-basic courses available within their specific fields of interest. These nurses depended upon medical texts and the experiential knowledge of more experienced nurses to develop their knowledge accompanied by clinical experience. As one nurse commented:

> I am developing my skills just through working on the ward. There aren't any text books [and] there are no courses in vascular surgical nursing. The only way that I would be able to improve is by working with people who have had more experience than me and [by using] medical texts. [SURGICAL 4/F/9]

Some nurses did not have the motivation to pursue the knowledge required for autonomous practice. These nurses seemed content to be semi-dependent on others and were happy to leave the major decision-making to others in complex situations. A nurse described this phenomena of nurses who depended on the skills of others in practice:

> There is also a relationship between nurses that don't wish to have that level of knowledge. They will quite happily get on with caring for a patient, hands on care, and just take directions from you. [ITU 3/D/13&14]

Nurses' confidence in their knowledge, skills and expertise was found to diminish slightly in the absence of continual involvement in patient care. Some had once felt they had reached a higher level of autonomy in practice and had found their skills and knowledge declined following a sustained period away from clinical practice. These nurses found they needed to check with others to discover changing aspects of patient care which had occurred in their absence. As one nurse observed of her own skills:

> I'm doing another degree. I work in my holidays, therefore I have big gaps when I don't work ... When I've had a big gap, like recently , the knowledge and experience doesn't go, it's just I haven't done it for a long time and I'm aware of it ... Maybe I'm a bit slower than I used to be and I need to check things with others. [ITU 1/L/8]

RELATIVE INDEPENDENCE IN PRACTICE: THE PROFICIENT NURSE

Nurses at the proficient level had confidence in their own skilful practice and were able to function with relative independence and minimal direction from others. These nurses clearly demonstrated the motivation needed to develop the clinical knowledge and skills required to function as autonomous practitioners. They had confidence in their deep understanding of all aspects of patient care. However, they did, on occasion, confirm decisions over changing aspects of patient care with recognised nurse experts within the field. Examplars are given below in which the surgical ward and ITU nurses described their confidence and ability to provide independent care in most patient situations.

These nurses had gained confidence in the speed and accuracy of their judgements in detecting changes in the patients condition. A nurse commented on her confidence to make independent decisions:

> I feel personally more confident ... [When I was] first qualified, when I collected a patient from theatre (laughs) I had eight airways in my pocket ... You imagine they are going to arrest every time. Now, with confidence and through experience you learn to assess quite quickly and that's an advantage. .I can pick up something that may be causing a problem quicker than I did two or three years ago. [SURGICAL 4/E/11&12]

Progression toward autonomy in practice was strongly related to accumulated knowledge gained from role models, updated theoretical knowledge pertaining to the field of practice, and actual clinical experiences of caring for patients in

complex and confounding situations. The synthesis of this knowledge was noted by a nurse:

> The knowledge, the experience, the practical abilities give you confidence so that when something happens you are able to make decisions. [SURGICAL 5/F/12]

The nurses found the knowledge gained from specialised courses accompanied by clinical experience advanced their ability to accurately assess the clinical state and needs of patients independently. The nurses greatly valued the increase in their biophysical knowledge gained from these courses. A nurse described the knowledge which underpinned her confidence to make independent decisions:

> I did the cardiac [course] which focused upon cardiac physiology and ECGs ... I can go into depth now . I know what to look for .and understand why and how it happens and what you could do to prevent it. You should be able to say, ' Could we perhaps do this?' .You feel more confident with what you're doing and why you're doing that. [ITU 1/N/8&9]

The nurses found it extremely difficult to function independently with knowledge gained only from clinical experience. This occurred when no courses or nursing literature were available for development of theoretical knowledge in their specific field of nursing care. One nurse noted the difficulty in attempting to practice independently without sufficient resources of theoretical knowledge:

> There's still things to learn, it's changing all the time ... Most of the information that we get is from ... medical research, very little nursing information and no courses, which makes it very difficult. [SURGICAL 2/A/8]

Nurses lost confidence in their ability to function independently when they were faced with a forced or voluntary move from their field of specialty. A nurse who was required to transfer from a medical to a surgical field of practice described the loss of confidence and ability to function independently:

> My ward was closed ... We were medical not surgical. So, it was a case of having to learn surgical procedures, having to deal with consultant doctors that we didn't know ... that was quite traumatic. But the anatomy and physiology stayed the same and as long as people tell me clearly I can pick things up fairly quickly. So there was a period when my confidence was diminished. [SURGICAL 2/A/6]

The ITU nurses had knowledge and confidence which guided the decisions made in their clinical practice. They noted an increased ability to identify and effectively manage patient care, without direction from others, a skill not fully present at the previous level. Their guidance and support of less experienced or knowledgeable nurses was apparent in the process of making judgements in complex patient care situations. As one nurse reflected:

> If you watch people who are on the ITU course, they are so panic struck ... They haven't yet understood and need you to guide them, trusting in your knowledge. [They know] you have that knowledge. [ITU 3/D/13&14]

The confidence of the proficient nurses to act independently in practice was built on previous experience and sound theoretical knowledge which guided their judgements. These nurses were aware of a change in their ability to make accurate judgements and act effectively to resolve the patient's situation, as noted in the following:

> If there is a problem I can immediately see what is the most important, immediate step that I need to take. My experience has taught me how to deal with the problem. [ITU 1/R/6]

However, these nurses still sought the opportunity to turn to an expert in their field of practice to check their practice and complex decision-making in care. A nurse summarised this need for the presence of an expert as follows:

> The technical side, you need to understand how it's affecting the patient ... you have to be confident ... I can handle the pacemakers, the balloon pumps, the ventilators, the machinery ... but you still need to keep up to date with them and I still need/feel that I have to go to the Sister and say, 'Do I understand this right, is there anything new?' You have confidence in your own view [and] even though I've done the course I still like to double check the information.
> [ITU 1/N/13]

AUTONOMOUS PRACTITIONER: THE EXPERT NURSE

Nurses at the expert level had the confidence to make autonomous decisions regarding patients' current health status and nursing needs. They were comfortable working as independent practitioners who collaborated with other health professionals, but no longer sought direction or guidance in their assessment of the patients' nursing needs. These nurses were also comfortable with the role of guide and supervisor of less experienced health professionals. They were confident in their ability to interpret trends and make important judgements regarding the needs of patients in their care.

Expert nurses were also able to consider multiple concerns simultaneously and without apparent effort. They required no conscious effort to assess the patients quickly and comprehensively while completing tasks, conversing with staff and attending to activities external to the patient currently under their care. Examplars are included below from the skilled surgical ward and ITU nurses who made important independent decisions in the assessment and nursing management of patient care.

These skilled nurses had achieved a high level of theoretical knowledge and recognised the difference it had made to their clinical skills and expertise. The motivated expert ITU nurses followed a familiar pathway of commitment to maintaining up-to-date theoretical and practical knowledge, which encompassed intensive care courses, self-directed professional education and extensive critical care experience. A nurse summarised the impact of ongoing knowledge development on her ability to function autonomously in complex critical care patient situations in this way:

> It goes back to your initial trainin. .It grows from there and the knowledge that you gain during your three year training. Then your specialisation, cardiothoracic surgery, the course, updating and experience. In my case it's nine years in Intensive Care. Experience counts as far as you see things and you know how to react to situations that you've known before. So it's a combination of all these things, really. [ITU 1/C/5]

The presence of a high level of theoretical knowledge, particularly in the areas of anatomy, physiology and pharmacology, allowed the nurses to debate with other health professionals the need for changes in patient care. One experienced ITU nurse pointed out the importance of the theoretical knowledge which underpinned her autonomous practice in the following,

> The theoretical knowledge, knowing the anatomy and physiology ... I know that's against what nursing education is doing, but it is so important or else you are just lost ... I certainly saw the difference in me once I had done the ITU course and learnt the theory behind everything I was doing. I was ultra-confident and I could talk to people and argue for different [approaches to] care. [ITU 3/D/12&13]

The skilled nurses noted the importance of having extensive and varied experience with patients, accompanied by theoretical knowledge, to develop expert clinical judgement in post-operative patient care. The amalgamation of knowledge and experience in skilful clinical decision-making was summarised by an experienced nurse in the following way:

> If you have enough experience, you can apply it to a variety of patients with different problems and needs. You need that experience to make judgements. Somebody that hadn't had any experience but had learnt all the possible effects of what might happen to somebody after an operation might not have that intuitive feel and know when to feel happy and when to feel anxious. [SURGICAL 2/H/8]

The knowledge gained from day-to-day experiences in practice was reflected upon and recalled by these nurses who judged each individual situation using the knowledge gained from a vast number of patients in care and an-in-depth knowledge of related theory. A skilled ITU nurse summarised the judgement involved in autonomous practice thus:

> Experience affects the speed of response and yet at the same time [helps you not] to be too reactive, for example, to the monitor [or] support drugs ... If you're fairly new then it's nerve wracking if your patient's dropping their blood pressure ... With experience and confidence you look at the whole patient and think, 'What caused the blood pressure to drop?' It might have been loss from the drains, or suddenly warming up, which we see in the children with the small volumes in their bodies. You can see a drop in the blood pressure and the CVP has dropped and with just a little bit of fluid it all settles. [ITU 1/P/9&10]

These nurses were also able to consider multiple concerns simultaneously and without apparent effort. The expert nurses required little conscious effort to assess the patient quickly and comprehensively while also attending to activities external to the patient currently under their care. An expert nurse described the skills which permitted the assessment and management of the care of a post-operative patient to occur while managing other activities at the same time:

> If I've got the most stable patient and the people around me are junior I look to see what their problems are and supervise them ... It's always on my mind what's happening around me, listening out to alarms [connected to other patients], to the doctor having a conversation [about the next patient]. .He didn't know what the drug was, I was answering him ... You're not on an island. When I was very junior I was on an island, like, 'This is my bed space and this is what I'm doing and I can't help anybody else because this is all I can cope with.' [ITU 1/A/5]

The expert nurses were confident in their ability to interpret and make judgements in autonomous patient care. An example of that confidence was noticeable in this surgical ward nurse's comments:

> I know from experience that I'm often right in what I've got to say and it's proven later on. So it's that ability to interpret information, a trend, a continuum of episodes, that you are able to pin something on and to try and prevent any deterioration ... You've got a skill that is preventative ... I think the main skill .is to interpret all of the information .and put it together into some rational opinion. [SURGICAL 6/B/10]

The autonomous practitioners, however, did not always hold ward management positions within the units. These nurses (particularly in ITU) were often content to continue caring for patients at the bedside and did not seek managerial positions. Their skills and knowledge were utilised in the autonomous care of critical and unstable patients, and guidance given to other nurses within the units. As one nurse noted:

> When I've got a junior person with me who asks a lot of questions. I know then [that I have gained expert knowledge]. I can compare myself to the new person, to the beginner ... Teaching them why are we doing this and why do we have to do that if things go wrong. .There's so much [to learn]. How the balloon pump works and why you use [it] ... How to use the ECGs, the monitors. How to go about doing things. About things that are going wrong and responding, also alerting the nurse in charge ... I feel that I'm there! [at expert level] [ITU 1/T/12&13]

SUMMARY OF NURSES' MOVEMENT ALONG THE DEPENDENCY - AUTONOMY CONTINUUM OF PRACTICE

Nurses progression across the dependency - autonomy continuum appeared to be intimately related to a number of factors. Dependent nurses who were motivated to learn gained knowledge from role models and educational sources. Theoretical and experiential knowledge provided the nurses with the ability to assess the patients' situation accurately and make decisions to change aspects of care without the constant direction of others. Nurses who remained motivated to gain more skills and knowledge advanced toward the autonomous level of practice. Motivation and the desire to maintain in-depth and current knowledge were found in autonomous practitioners. Loss of motivation and desire to advance knowledge, by contrast, was identified in nurses who remained semi-dependent under the direction of others.

The nurses interviewed agreed that learning took place most effectively when knowledgeable practitioners were available to guide and direct practice. They observed and followed the directives of others to develop their practice skills and knowledge in care. Thus, facilitative and knowledgeable practitioners had a profound influence on the development of the nurses' abilities to act

independently in patient care. Their knowledge and skills were passed on during the act of guidance or direction of the nurses during practice. Nurses who had role models with limited knowledge, on the other hand, found progression toward independent decision-making a very difficult process.

The nurses grew in confidence as their skills in assessment and judgement of patients' conditions and care improved in practice. They found that it was also important to develop and maintain their knowledge and skills through regular exposure to a similar patient group in practice. Effective and skilful episodes of patient care provided them with confidence to act independently in similar situations. Conversely, the lack of regular practice was found to have a detrimental effect on the nurses' ability to make independent judgements during care. The nurses found a loss of confidence in the accuracy of their assessment and clinical judgements in patient care following extended absences from practice. Nurses who chose to limit or participate in clinical practice on an occasional basis found they were unable to maintain their previous level of autonomy in patient care.

An increase in the nurses' theoretical knowledge, in particular bio-physical sciences applied to practice, had a major impact on their progression from dependency to autonomy in care. The nurses grew in confidence and ability to direct patient care as they gained an increasing level of theoretical knowledge to underpin their practice. These nurses utilised post-basic courses, the advice of other nurses and health professionals, and their own reading of journals, text books and ward literature to access theoretical knowledge to improve their practice. Nurses who were unable to advance their theoretical knowledge through such educational pathways did not reach an autonomous level of patient care.

CHAPTER NINE:
`FROM TASK ORIENTATION TO HOLISTIC PRACTICE' - A POTENTIAL INDICATOR OF DEVELOPING EXPERTISE:

INTRODUCTION

Observation of practice and examination of the transcript data made possible the identification of four levels of function along a continuum between task orientation and holistic patient care. Qualitative differences emerged from the data in the ability of nurses to be holistic in their assessment of the patients' status following major surgery. The relationship between expertise and level on the continuum can be expressed as follows:

- Task orientation in patient care: the advanced beginner nurse
- Task orientation with increasing patient awareness: the competent nurse
- Patient awareness with decreasing task orientation: the proficient nurse
- Holistic carer: the expert nurse

Advanced beginner nurses focused on the completion of tasks and observations according to taught protocols and medical treatment orders during patient care. Competent nurses also focused on the accomplishment of tasks but were more aware of the relevance of resultant findings to the patients' condition. Proficient nurses demonstrated increasing perception of the significance of a myriad of subtle clinical cues in the patients' conditions, while still focusing on the tasks involved in practice. Nurses at the expert level possessed perceptual appreciation of the salience of clinical signs, providing a holistic grasp of the patients' conditions while completing everyday tasks of care. Examplars are given below in order to illustrate characteristics of nurses at each of the progressive stages on the continuum towards holistic practice.

TASK ORIENTATION IN PATIENT CARE: THE ADVANCED BEGINNER NURSE

The advanced beginners focused their attention on the tasks and observations required for the patients' safe recovery following anaesthetic and surgery. They concentrated upon the technical tasks of connecting the patient to life

support, monitoring and maintenance equipment (e.g. cardiac monitors, arterial lines, transducers, drains, pumps, drug therapy, central and intravenous therapy) and gathering readings during the initial post-operative period. However, their focus remained firmly on the tasks and information-gathering rather than interpretation of the clinical observations to reach a physical or psychological assessment of the patients' current status. Examplars are included from both the surgical ward and ITU nurses, which demonstrate their focus on the tasks and procedures in the patients' care.

A surgical ward nurse's description of her care of a patient who had undergone a bowel resection demonstrated these characteristics in the following way:

> In recovery I [told] him that I was there and that we were going to go back (to the ward) ... I listened to the nurse, to the information. Taking it all in so that I knew what I had to do when I got back to the ward ... Had he had pain killers, Would he need them ... It's a question of getting things sorted out, so you can actually do things with him. I wondered if his obs. [vital signs] would need doing, they did, so I did them. I was just running through a mental checklist. [SURGICAL 2/K/1]

The beginners focused on the management of the monitoring and maintenance tasks of patient care throughout the early post-operative period. The low priority placed on psychological status was demonstrated by the absence of any reference to observing for signs of distress, anxiety or fear in the patient during this period of care. Drowsiness induced by the anaesthetic and analgesic drugs was understood to mean there was little need for the nurses to attend to potential psychological concerns at this time. As one beginner nurse commented:

> The physical needs take preference ... People are quite sleepy you can't tell how they are. Especially in a post-op. patient, because you have got so many other things you need to do first. ... Unless the person is very overtly expressive or upset, I don't really think that we make it a priority ... Perhaps later ... In the early stages its something that's not really dealt with. [SURGICAL 2/K/4&5]

The attention of advanced beginner ITU nurses was also placed very firmly on the successful completion of the set tasks and procedures to correctly monitor and measure the patients' physiological signs. Nurses working in the cardio-thoracic intensive care units followed a routine sequence incorporated in the ward protocol and directed by more experienced nursing staff. Those who had been taught to use a head-to-toe or systems approach during their pre-

registration programmes applied it in their care of post-operative patients. Those nurses who had not been taught a structured approach learnt by trial and error how to prioritise the ordered tasks and observations of patient care. An ITU nurse described her focus on completing specific tasks in the care of a ventilated woman following an abdominal aortic aneurysm repair:

> When the patient arrived, I made sure she was on the ventilator and got her on the monitor. There were two of us there. Once she was on the monitor, I could see the cardiac status, rhythm, blood pressure and whether I needed to make any immediate intervention. That gives you a lot of information about the patient ... I attached other things, a probe to get the temperature on the monitor, which is important for her operation. Sorted out the drips and lines and made sure the infusions were going, jotting down the observations ... A blood gas to find out, the respiratory status ... Then I stepped back and thought, Have we got everything attached, have we got all the information we want, is there anything I need to do just now ... Its [done] in order of importance. As your knowledge increases, you are better, quicker at assessing things. I have never used the equipment before so it takes longer, finding how everything works.
> [ITU 3/I/1&2&3]

The ITU advanced beginners responded to overt signs of distress or anxiety by following medical orders to sedate and/or give analgesia to the patient. However, these nurses did not appear to recognise subtle physiological signs which could be linked with an unsettled psychological state. As one of the nurse's noted:

> I could see that this lady was fairly asleep. That allows you time to do things that you need to do ... If she had been really awake, leaping around the bed and couldn't be ventilated properly ... I would still want her on the monitor, but then our priority would change. I would want her comfortable and sedated ... Things will start to go wrong if she's distressed. It's not nice for her with tubes and bits and pieces, to wake up.
> [ITU 3/I/4&5]

TASK ORIENTATION WITH INCREASING PATIENT AWARENESS: THE COMPETENT NURSE

The focus of the competent nurses attention during the care of patients in the initial post-operative period altered from the total task-orientated state found in the beginners. The nurses described the completion of the technical tasks required for monitoring and maintaining patient care with some interpretation of the significance of the findings. However, the nurses' priority still remained with the speedy completion of routinely ordered post-operative tasks of

patients' care. Examplars are included from the surgical ward and ITU nurses who demonstrated this mixture of task orientation and recognition of the significance of obvious clinical signs in the post-operative patient.

One nurse described her focus on technical tasks with some interpretation of the clinical signs of a patient who had undergone a distal pancreatectomy:

> Going up to him. I was more or less .looking at his face to make sure he was breathing, then just concentrating on the information the nurse was imparting ... He was responding, just very sleepy at the moment ... Then I made sure we got the IVI sorted ... My thoughts were just, Get him down to the ward as quickly as possible, ensuring his safety ... Trying to ascertain if he was alright as quickly as possible ... He was warm to the touch, he was breathing. I was talking to him and he was responding very slightly whilst he was still sedated ... Airway breathing, circulation ... I put the oxygen saturation on and it was a hundred. I was quite happy, he was getting enough oxygen in. Then I started to do base line obs whilst keeping an eye on him and talking to him, making sure that he wasn't in any pain, wasn't sick ... Checked the instructions from handover in the recovery room, blood sugar to be one to two hourly, the fluids need to run through to midnight, wanted hourly urine measurements. I was prioritising, making sure he was safe, and then it was tidying up, getting mouth washes and getting charts straight. [2/F/1&2&3]

Generally the competent surgical ward nurses were focused on attending to the observations and tasks to monitor and maintain respiratory and circulatory stability and the alleviation of the patients' pain during the initial post-operative period. The priority placed upon meeting psychological needs was dependent on the physical stability of the patient. The nurses' major emphasis remained on achieving the tasks while endeavouring to explain the procedures and activities to relieve the patients' anxiety. The same nurse described her focus on the psychological needs of the patient:

> Well, it's secondary really. You have got to ensure that they are physically safe ... Once you've got all the obs, you've got something to work on. From that you'll need to trot off to the doctor to report on your findings if they are abnormal. Then you can think about, is the patient comfortable. Having said that, I just remembered throughout I was actually telling him what I was about to do. I was trying to communicate with him just to find out if he was in any pain and if he was feeling sick ... Just to make him aware of what's going on and mentioning that he's back in the ward so at least he knows. I don't know how much he's aware of or how much he's taking in. [SURGICAL 2/F/5&6]

Competent ITU nurses had also altered their focus from total concentration on the tasks to be more aware of the significance of clinical observations which

were outside of the set parameters of the patients' vital signs. One nurse described her need to concentrate on complex monitoring tasks while trying to interpret the clinical signs of a patient following a CABG:

> I listened to the anaesthetist and looked at the patient at the same time, judging what I thought of the patient's colour and breathing and how I felt about the patient while I was looking at him ... Got the patient attached to the monitor and saw the rhythm and the rate. I was happy with that, I had pretty much decided that the patient was okay and I didn't need to think of anything else at that stage ... [The theatre staff] were telling me they had had trouble with bleeding ... It concerned but didn't worry me ... I got the E.C.G. leads on and the arterial line and the drains. Those three things are the most important. ... That's what I've been told, [and understand] from watching people ... I would have liked to have done the drains faster, in case they were bleeding so he wouldn't tamponade. I was happy with him ... I checked his pupils and they were okay. Made sure that he was breathing with the ventilator, checked that his chest was going up and down and the pressures weren't too high or too low. The C.V.P. line wasn't going right. You don't .know what's happening and don't have the time to sort it out ... Then I checked his feet and did a scan to see if anything was untoward ... I covered him to get him warm, got his fluids going, and got some recordings on paper, did his drains and a gas. [ITU 1/E/1&2]

These nurses were familiar with the verbal and behavioural signs of fear, distress and pain in the conscious post-operative patient. They also had an increasing awareness of the significance of the physiological signs suggestive of pain or anxiety in the unconscious patient. A competent nurse described her consideration of a patients psychological status in the following way:

> My patient has just woken up. My first assessment of his psychological state doesn't really finish until I'm aware of his responses and how he is when he has woken ... It comes into play continuously ... Every time I milked his drains today I was wanting to know what his heart rate did to see if he was awake or breathing up on the ventilator. Checking to see if he was awake, unsure where he was, or afraid. [ITU 1/E/6]

PATIENT AWARENESS WITH DECREASING TASK ORIENTATION: THE PROFICIENT NURSE

The proficient nurses focused their attention on identification and interpretation of important clinical cues in a detailed patient-centred post-operative assessment. They attended to the tasks of care without maintaining a conscious effort to focus on the sequence and actions required. Instead, the nurses concentrated upon the assessment and interpretation of clinical signs and cues. Other crucial aspects of the patients' past medical and nursing

history, pre-operative state and intelligence from theatre and recovery staff were also considered in the nurses' judgements of the patients' status and needs. Examplars are included from surgical ward and ITU nurses who demonstrated a prevailing focus on gathering and interpreting information and a decreasing awareness of task in patient care. As one nurse recalled:

> Because of the experience of having [the patient] on the ward I have a good idea of what to expect. You see the patient in the bed and you're looking to see the colour of the patient, whether they're sitting up or lying down, whether they have oxygen. I looked at the sides of the bed to see if there's any drains, catheters. That gave me some idea of what's happening. I like to listen to the anaesthetic nurse, she'll tell me about the actual operation that's taken place. When she [had] finished running through everything, I like to look for myself at the wound, at the drains. I like to look at the patient, touch the patient, to see how awake the patient is and also to tell the patient that I'm there and to take them back from the recovery unit. Pain is often the biggest problem to the patient and I'm very interested to find out what analgesia is written up and what's been given and when. If I felt the patient was very distressed, I'd make sure they had analgesia and good breathing before I took them back. I get the patient back to the ward and get them sorted out as quickly as I can ... look at the notes the surgeon's made and also to look at the notes of the Anaesthetist. Sometimes you don't get all of the information from the Anaesthetic nurse ... That gives me all the information that I need to get him to the ward safely and to be able to nurse him as soon as he's back ... and then any other information I can glean for myself ... I think the main thing would probably be [to be] able to study the surgeon's notes in more depth so that I can understand exactly what's happened. I'd go through again, very much of what I've done in recovery but in more detail as far as the wound is concerned, how much has drained into the drains, where the drains are coming from, how much has come from the catheter ... A baseline set of observations myself, pulse and blood pressure. BM stick and then from there I can decide on the course of care for the next hour or two hours or for the next shift. [SURGICAL 2/A/1&2]

These nurses were much more aware and alert to the potential psychological needs of the post-operative patients. Their assessments were individualised and demonstrated the nurses' awareness of physical and psychological elements of well-being. The same proficient nurse, quoted above, utilised pre-operative knowledge of fears and anxiety to answer the most pressing questions for both patient and family during the early post-operative stage in the following way:

> I think that the question he had first on his mind as a patient who has cancer was, Was the operation successful - is it all out and that's enough. Once patients have that information I feel that for the time being they can perhaps settle, rest and sleep. But I think the greatest support goes to the family and friends

> and relatives. I think the psychological support at that time for those people sometimes is greater.

The same nurse went on to remark:

> Simply because the patient is doped with the anaesthetic and is having strong pain killers and has other problems on top to deal with such as pain, immobility. [SURGICAL 2/A/5&6]

The general and specialised ITU nurses focused on interpretation of the information and clinical signs gathered through the multiple and complex monitoring and maintenance tasks. The cardio-thoracic nurses were in the unique position of caring for patients having the same surgery on a very frequent basis. They demonstrated skills in detecting subtle signs that fell outside of the normal experiences of post-operative patients within their care. The opportunity to gather experiences of patients having the same surgery did not occur at the same intensity for nurses working in general ITUs. A skilled ITU nurse demonstrated her ability to develop a thorough understanding of the current status of a patient in the following way:

> I just generally looked at the patient. He was awake, he was moving air, so the initial assessment was that we could be quite relaxed. He came up with a portable monitor. So I had a quick look at that and then attached him to our monitor ... then just see what support drugs [were needed]... He just had Trydil which isn't too urgent ... I just switched the Trydil off to him and put it onto one of our machines and carried it on at the [same] doses. I always check the doses allowed with the doctor that's there, just in case ... I put him on the E.C.G. I had a look at it to see he was in sinus rhythm. I saw that other nurses were connecting up the transducers ... I noticed he was quite cyanosed. I wasn't really happy with the C.V.P. trace so I went round to change it over to the maintenance line. ... The C.V.P. seemed a bit high it was fifteen, so I wanted to check it and I made it just about the same ... I checked with the doctor to make sure the lines were in the internal jugular [vein]... The pressure was up and the patient was in obvious pain. We'd given him a few boluses and [the doctor] had left the morphine going at the maximum. So I was just a little bit concerned that we might knock the patient off too much. I asked one of the Sisters present to check if that had been turned down ... I looked at the drains, the blood loss was minimal. I checked with one of the surgeons about the blood status, in theatre. They'd ordered some fresh frozen plasma and its always a bit suspicious because you're not too sure if they've had a bleeding problem ... It turns out this patient was on aspirin pre-operatively, so it's just a precaution. Minimal blood loss and had a quick look at the urine. The urine is haemolised which is often from bypass surgery. There was over two litres in the bag ... record the obs. ... I did the blood gas while the patient was awake and actually in pain. So he might have been breathing not so deeply. But he was shifting volumes of air. He might not have been expanding his chest because he was in

> discomfort and the first blood gas was fine. By the time I came back the anaesthetist had given him further sedation and his breathing pattern was quite different ...

The same nurse continued:

> I suggested repeating the blood gas but the anaesthetist said no, wait a bit longer. I recorded one lot of obs soon after he came back ... We glimpse up at the monitor to see what variations are up I'm not sure how often so we have a rough idea of what's going on ... we covered him up ... wrapped his feet up in a towel, passed a peripheral probe to somebody to attach to his foot and noted that he was quite cold still. Then the only other temperature we take is per axilla which we've only just done now. That's a low priority thing ... while you've got the doctors there, because they're there for such a short period of time, check the doctors orders with them, just to make sure there are no misunderstandings ... I met his wife so I know she's been spoken to by the surgeon. [ITU 1/B/1&2&3]

Proficient ITU nurses were conscious and watchful for the possibility of anxiety, fear and pain in paralysed and unparalysed post-operative patients. They endeavoured to identify and reduce the concerns of patients requiring intensive care following major surgery. One ITU nurse described her efforts to interpret the individual's psychological needs as follows:

> It's important right from the moment the patient hits the hospital ... Get them to come and have a look around ITU and familiarise themselves with us and talk about what they are scared about. I'd like to see nurses being more involved. Going into the theatre, you can see why they are in so much pain. And then in the early stage, after theatre, just going around and saying, 'Hi I'm looking after you' ... It's been proved to calm people down assists in their pain control. And if they know you then it's easier. He knew me and was calm ... I think about the times that I have been in hospital , you are looking for someone to grab onto, that you can link in with. [ITU 3/D/7&8]

HOLISTIC CARER: THE EXPERT NURSE

Expert nurses clearly demonstrated the ability to gain a holistic understanding of a patient's situation while attending to the technical aspects of care at the same time. They focused on the significance of observations and the results of monitoring to assess and prioritise immediate action in the patients' care. The nurses interpreted the meaning and significance of clinical observations to reach an expert judgement of the patients' contextually-bound situations.

Expert nurses used their knowledge to interpret all relevant information to gather a comprehensive overall picture of the patients' status. This ability to

gain a holistic understanding was not articulated by nurses at the advanced beginner or competent levels, and to a limited extent only by nurses at the proficient level. These nurses knew what signs to look for and how they expected the patient to react within their situations. Their assessments took into consideration what had happened to the patients in the past, during the pre-operative period as well as the current clinical signs found in the patients. These nurses were thus able to focus on the salient issues to form a holistic assessment which considered the physical, psychological, social and cultural aspects of the patients' lives.

Expert nurses interpreted the clinical observations gained from procedures, observations and tasks to identify issues of significance within the individuals peri-operative situations. Nursing decisions were incorporated throughout the patients' assessments which affected the nursing actions and interventions, involving and informing medical staff, attending to the needs of the other nursing staff and consideration of the patients families. It is in the way these nurses negotiated the complexities of care, while remaining sensitive to the changing needs, both large and small, of the patients and their families that their abilities to provide holistic care were demonstrated.

A flavour of the expert nurses' abilities can be gained from the following excerpts of an ITU nurse's description of her interpretation of a patient's clinical signs following CABG surgery:

> When the patient came in - did he look all right?... I expected the patient to be extubated on arrival, no [mechanical] supports and maybe need a little pain relief. Initially what was in my mind was, Was the patient breathing properly? He looked obviously cold, he was pale, a little bit blue. The results of the gases were not good. The anaesthetist said that he was quite happy with 90 per cent saturation which tells me that his gases have been very poor in theatre. This meant I focused on the breathing pattern, Was it shallow or good enough, was he oxygenating, expanding his lungs properly? Was he warming up? Yes, I was happy with him. [ITU 1/T/1]

The nurse interpreted the patient's respiratory signs and the meaning and significance of the doctor's expectations of oxygenation. She made further judgements in relation to the patient's ability to move all limbs, indicating no cerebral complications following surgery:

> When we were moving him, he was moving as well but then he went into a deep sleep and I asked him to please move his limbs which he has done. There's no weakness that I have noted. [ITU 1/T/1]

The nurse's interpretation, judgements and actions continued as an interwoven process, considering and responding to the patient's clinical signs, doctor's orders, feelings and past experiences of caring for similar patients:

> His blood pressure was initially very low but we gave him volume and also pethidine to ease the pain, and eventually with the volume the blood pressure has gone up. We cannot monitor temperature rectally, the peripheral probe is broken. I've just been assessing by axilla. But he was cold to touch above the knee is slightly warm and below is very cold. ... Then the central venous pressure, the doctor wanted a C.V.P. of 5 to 6, with the volume we have already given - two hundred mls. - it went up to about 4 from nought. That perfused the patient, giving him volume, giving him good blood pressure. I've also assessed for bleeding. The doctor said he was bleeding downstairs but when I touched the tubes they weren't warm. Usually when they're bleeding, its oozing right down and its warm to touch. So I wasn't at all disturbed about that when I connected them to the suction. He wanted him on Trysanol, one of those [drugs] that stops the bleeding, and so I was glad I left that aside until a bit later. Initially I would give the Dopamine, although its only renal [in action], it helps the blood pressure. So that was it initially, he was physically stable and we could then turn to other issues. [ITU 1/T/1&2]

Such expert nurses were aware of the anxiety of patients and their families, and turned their attentions to relieving this as soon as possible following admission to the ward. One nurse's awareness is reflected in the following:

> It's linked to conscious level as well. If the patient is regaining consciousness underneath, and he doesn't speak English, he's in a strange environment, his pain and anxiety is going to climb. That might have an influence on the observations and the recordings that you're seeing, the blood pressure or the pulse might go up ... We obviously would first deal with his physical needs to make sure he is safe and then talk to the patient ... Then I could get the interpreter. When the relatives come I encourage them to talk to the patient to reassure them that everything is okay ... I know, 'operation is over' in Arabic, that was what I was saying. It is difficult where you have foreign patients to adequately meet their psychological needs. [ITU 1/P/11]

SUMMARY OF THE MOVEMENT OF NURSES ALONG THE TASK ORIENTATED - HOLISTIC CARE CONTINUUM IN PATIENT CARE

The changing ability of nurses to provide holistic care was exposed through the narratives of their practice. Advanced beginner nurses did as they were taught and focused on completing tasks according to the ward protocols to monitor and meet the basic needs of their patients. Beginner nurses were focused on achieving mastery of the technicalities of post-operative care.

They attended carefully to each and every observation and procedure, and were fearful of missing an important component of monitoring and maintenance of individuals who have recently undergone very major surgery. Cues from the patients which were suggestive of psychological or emotional concerns were often not noticed by these nurses, as they fell outside of the tasks designated as important to physical care. Thus, overall, the attention of beginner nurses remained very firmly on the successful completion and mastery of the set tasks and procedures required for the patients' care

The competent nurses focused on the care of patients in the initial post-operative period had altered from the beginners' total task-orientated state. They had gained a sense of mastery over the tasks required for patient care and were increasingly aware of the significance of physical and behavioural clinical signs in the patient. These nurses were also more aware of overt anxiety or distress demonstrated by the patients. However, the major emphasis of these nurses remained with the speedy and effective completion of tasks while gaining a greater awareness of the significance of the signs to the progress of the patient.

The proficient nurses demonstrated further progression towards a more holistic awareness of the patient. They focused more on identification and interpretation of significant clinical cues and attended to the tasks of care without having to think of the sequence and actions needed. The nurses drew on a myriad of sources to gather relevant information (e.g. past medical and nursing history, pre-operative state, intelligence from theatre and recovery staff) to inform their judgement of the importance of the clinical features noted in the patients' post-operative states.

Nurses at the expert level exhibited perceptual and analytical abilities with which they identified and interpreted an extensive range of subtle cues to make holistic judgements and prioritise action for patient care. They knew what signs to look for and how they expected the patients to react within their situations. Their assessments took into consideration what had happened previously to the patients, the theatre and recovery period and the clinical signs currently found in the patients. These nurses were able to undertake the physical tasks of monitoring and maintaining patient care whilst mentally assimilating information concerning the patients' conditions. They interpreted

the clinical observations attained from these tasks to identify issues of significance within teach individual's peri-operative situation.

The expert nurses' decisions involved and informed medical staff and directed the nursing actions and interventions which affected the patients and their families. It is in this consideration of both subtle and obvious issues of importance to the care of patient and family that the expert nurse's ability to provide holistic care was demonstrated. Experts interpreted salient information to reach a comprehensive and holistic understanding of each patient's situation and make expert judgements of their needs.

INDICATORS OF DEVELOPING EXPERTISE POSTSCRIPT

This short postscript utilises the indicators to identify the nurses' individual levels of expertise through the data. It then compares the nurses' levels established through this process with those identified through the professional judgements of three nurses. Confirmation of the nurses' levels of expertise made it possible to collate the nurses' clinical and educational backgrounds according to level of practice. Therefore the final component of this postscript examines the nurses' years of clinical experience, post-basic courses and academic qualifications at each of the four levels of expertise.

IDENTIFICATION OF THE NURSES' LEVELS THROUGH THE FOUR INDICATORS OF DEVELOPING EXPERTISE

The previous four chapters have described four indicators which exist on continuums ranging across four levels of practice from advanced beginner to expert. These qualitatively different levels were then used to consider the data gathered from each nurse to establish their levels of expertise. When the nurses' data was compared, a consistent relationship emerged for each nurse across the same level of the four indicators of developing expertise. That is to say, a nurse identified at the advanced beginner level of the first indicator also tended to be identified as an advanced beginner in the second, third and fourth indicators of developing expertise. Thus it was possible to establish that such a nurse was functioning at an overall advanced beginner level of expertise.

The levels achieved across the four indicators by each of the surgical ward and ITU nurses are summarised in Appendix (x). The consistency found between these indicators made it possible to identify the ITU and surgical ward nurses' levels of expertise at advanced beginner, competent, proficient or expert stage (Appendix xi). However, it was also apparent that the continuum of expertise was very dynamic. Some nurses showed signs of likely transition to the next level of expertise in the near future, by displaying for example, elements of the advanced beginner and competent levels across the four indicators of developing expertise. The most dominant level of function was used to establish these nurses' levels of expertise.

THE NURSES' LEVELS OF EXPERTISE DEFINED BY PROFESSIONAL JUDGEMENTS

It was considered important to establish confidence in the 'trustworthiness' of the interpretation of the findings for the participants in terms of their identified levels of expertise. The researcher needed to confirm through multiple sources of evidence that credible reconstruction of the reality of the participants level of practice had been achieved within the study. Issues of rigour such as credibility and neutrality required the researcher to test that these findings were determined by the data gained from the participants and conditions of the inquiry, and not by distortions based on biases or perspectives of the researcher (Lincoln and Guba 1985).

Judgements of each of the participating nurse's levels of clinical expertise were therefore sought from three sources in addition to the interview and observational data. First, the ward sisters or charge nurses, recognised as clinical experts by their positions, were asked to make judgements of the nurses' levels of expertise working within their surgical wards or intensive care units. Secondly, the participating nurses were asked to rate their own level of clinical expertise within their present field of practice. Thirdly, the researcher also made a professional judgement of the participant's level of expertise, following observation of their practice in the assessment and care of a post-operative patient.

A five stage continuum of clinical expertise (Benner 1984) was utilised in the professional judgement of each participant's practice. The five stages across the continuum of expertise were described in the following way. The first was labelled 'Novice' and described the level of expectation of a very new and inexperienced nurse within the area of practice. The second stage was referred to as the 'Advanced Beginner', the third as 'Competent' and the fourth, 'Proficient'. The 'Expert' nurse was included as the fifth and final stage on the continuum, and described the very skilled and knowledgeable practitioner who had a great deal of nursing expertise.

The professional judgements made by these nurses of each participants levels of expertise were summarised (Appendix xii). Analysis of these judgements identified remarkably similar ratings between those given by the researcher, the ward sister and each nurse of her own level of practice. The judgements of each participants level of expertise was unanimous on forty out of sixty-one

occasions. Agreement between two out of the three assessors occurred on a further nineteen occasions. Close agreement on the nurses' levels of expertise was thus found to occur for fifty-nine of the sixty-one participants.

Variation of agreement between the nurses' judgements of the participants of more than one level of expertise occurred for only two of the sixty-one participants (nurses 1/D and 2/B). The first of these two nurses (1/D) was rated by two of the assessors as expert and by herself as competent and was thus identified as an expert. The second nurse (2/B) was rated at the novice, advanced beginner and competent level of expertise by the three assessors respectively. Consequently the nurse was rated as advanced beginner as this was the middle of the three rated levels. Overall, this is a remarkable finding, since the nurses' judgements were made independently and blind, without any opportunity for discussion.

COMPARING NURSES' LEVELS OF EXPERTISE DEFINED THROUGH THE DATA AND DEFINED BY PROFESSIONAL JUDGEMENTS

The professional judgements were put aside during the data analysis stage and returned to following interpretation of the nurses' levels of expertise from the data. The subjective ratings of levels of expertise by the three-nurse panel and the findings of expertise identified through the data were then collated for comparison (Appendix xiii). Three levels of agreement were explored. First, unanimous agreement produced the same level from the judgements of the three nurses and the data. Secondly, close agreement occurred when three of the judgements were unanimous and the fourth was within one level of difference. Thirdly, disagreement was considered to occur if any greater variation was found between the judgements made of a nurse's level of expertise.

A remarkable convergence of agreement occurred between the professional judgement of the three nurses and each nurse's level of expertise identified through the data. The nurse's level of expertise, reached through the professional judgements of the three nurses and identification by the data, converged in unanimous agreement in forty instances (66%). Close agreement, in which three judgements were the same and the fourth within one level of difference, occurred on a further twenty occasions (33%). Thus a unanimous or close agreement between the four forms of judgement of the

level of each nurse's expertise occurred for sixty of the sixty-one participants (99%). The convergence between the judgements of the ward sisters, the participant nurses and the researcher and the level of the nurses' expertise identified through the data provided powerful support for the credibility of the indicators in the identification of the nurses' levels of expertise.

THE NURSES' CLINICAL AND EDUCATIONAL BACKGROUNDS AND LEVELS OF EXPERTISE

The details of each nurse's clinical and educational background were gathered at the time of interview. These details included total years since registration, years in the specific field of practice, breaks in acute care practice, years in other areas of practice, enrolment and completion of post-basic courses and academic qualifications. Identification of each nurse's level made it possible to group this data according to the four levels of expertise. That is to say, that the details of all of the nurses identified at advanced beginner, competent, proficient and expert levels were tabled respectively. This collation made it possible to consider and compare the clinical and educational backgrounds of nurses at each of the four levels of expertise (Appendix xiv). Analysis of these comparisons in relation to the nurses' years spent in clinical practice, post-basic and academic qualifications are detailed below.

THE NURSES' YEARS OF CLINICAL PRACTICE AT EACH OF THE FOUR LEVELS OF EXPERTISE

Each of the surgical ward and ITU nurses years following registration and years spent within the specific field of practice were summarised according to their level of expertise. Thus these details were collated for the ITU nurses identified at the advanced beginner, competent, proficient and expert levels of expertise. Similarly the details of the surgical ward nurses were grouped according to their levels of practice (Appendix xv). These results were then combined to provide an overall summary of the nurses mean, median and range of years in practice at each of the four levels of expertise (Appendix xvi).

Analysis of the nurses' years following registration at each of the four levels of expertise yielded several interesting findings. There was a steady increase in the minimum of years of practice at each level of expertise which appeared to indicate the potential for some nurses to progress from beginner to expert in five years. However, this five-year movement from beginner to expert was

not consistent, as many of the ITU nurses who had been registered for over five years were not currently above the competent level of expertise. Similarly, surgical ward nurses who had been registered for over five years were identified at each of the competent, proficient and expert levels of expertise. Therefore, the number of years post-registration appeared to provide little indication of the likely level of a nurse's expertise within a specific field of care.

Similar findings were found when years in the specific field of practice were considered in relation to the nurses' levels of expertise. A relationship did not remain constant between a nurse's years in ITU practice and an increasing level of expertise. Nurses who had over five years of clinical experience in the ITU environment, for example, were not necessarily identified at the expert level. Therefore no clear relationship emerged between the number of years spent by the nurses in practice within the ITU environment and their levels of expertise. Similarly, analysis of the number of years spent by the surgical ward nurses in their respective fields of practice revealed no constant relation with levels of expertise. Surgical ward nurses with two years in the specific field of surgical interest, for example, were identified at competent, proficient and expert levels of clinical practice.

The lack of a close relationship between the number of years spent following registration or indeed in the specific field of practice and the nurses' levels of expertise became very apparent when the details from the ITU and surgical ward nurses were grouped together. This provided an overall summary of the nurses range in years in practice at the advanced beginner, competent, proficient and expert levels of practice (Table 15).

TABLE (15)
OVERALL SUMMARY OF THE NURSES' YEARS IN PRACTICE ACROSS THE FOUR LEVELS OF EXPERTISE

NURSES LEVELS OF EXPERTISE	YEARS SINCE RGN REGISTRATION	YEARS IN SPECIFIC FIELD OF PRACTICE
ADVANCED BEGINNER NURSES	1 month to 5 years	1 month to 18 months
COMPETENT NURSES	9 months to 21 years	2 months to 18 years
PROFICIENT NURSES	4 years to 20 years	1 year to 16 years
EXPERT NURSES	5 years to 19 years	2 years to 13 years

This tabled summary demonstrates the lack of correlation, for the nurses in this study, between the number of years following registration or spent in a specific field of practice and a specific level of clinical expertise.

THE NURSES' POST-BASIC COURSES AND ACADEMIC QUALIFICATIONS AT EACH OF THE FOUR LEVELS OF CLINICAL EXPERTISE

The post-basic courses and qualifications obtained by the surgical ward and ITU nurses were summarised at the advanced beginner, competent, proficient and expert levels of expertise (Appendix xvii). These results were then combined to provide a summary of the nurses' post-basic courses and academic qualifications at each of the four levels of expertise (Appendix xviii). An overall trend was noticeable, with an increasing number of nurses from the competent to the expert levels completing post-basic ITU courses and academic programmes. Management and education certificates, diploma and bachelor degree programmes were increasingly pursued by nurses at the proficient and expert levels of practice. Similarly, there was an increasing number of surgical ward nurses from the competent, proficient expert levels who had completed post-basic courses, management and education certificates and degree programmes.

An overall summary of the number of post-basic courses completed by the nurses at each of the four levels of expertise was then collated (Table 16). A noticeable increase can be seen in the number of nurses who had completed post-basic courses which pertained to their fields of practice at each advancing level of expertise. These findings support the nurses' perceptions of the importance of theoretical knowledge to their understanding of patient care. It is also interesting to note the steady increase in the number of nurses who had undertaken teaching and assessing courses across the levels of practice.

TABLE: (16)
OVERALL SUMMARY OF THE NURSES' POST-BASIC COURSES ACROSS THE FOUR LEVELS OF EXPERTISE

LEVELS OF EXPERTISE (% of total number of nurses at each level)	ITU AND RELATED POST-BASIC COURSES	TEACHING AND ASSESSING COURSES
ADVANCED BEGINNER NURSES	0/11 (0%)	0/11 (0%)
COMPETENT NURSES	7/18 (39%)	1/18 (6%)
PROFICIENT NURSES	15/20 (75%)	5/18 (28%)
EXPERT NURSES	11/12 (92%)	4/12 (33%)

The academic qualifications undertaken by the nurses at each of the four levels of expertise were also summarised (Table 17). A general increase in the number of enrolments and completed academic programmes were noticeable in the nurses at each advancing level of practice. This trend culminated in more nurses working toward Certificate, Diploma, Bachelor and Masters degree qualifications at the expert level than at any other level of practice.

TABLE (17)
OVERALL SUMMARY OF THE NURSES' ACADEMIC QUALIFICATIONS
(IN PROGRESS OR COMPLETED)

LEVELS OF EXPERTISE (% of total number of nurses per level)	CERTIFICATE	DIPLOMA	BSc/BA	MSc
Advanced Beginner nurses	1/11 (9%)	1/11 (9%)	1/11 (9%)	0/11 (0%)
Competent nurses	1/18 (6%)	2/18 (11%)	4/18 (22%)	0/18 (0%)
Proficient nurses	6/20 (30%)	2/20 (10%)	7/20 (35%)	0/20 (0%)
Expert nurses	7/12 (58%)	2/12 (17%)	5/12 (42%)	1/12 (8%)

SUMMARY

This section draws upon each of the four indicators to identify the nurses' levels of clinical expertise. The nurses' levels identified through the data were found to be in strong agreement with the professional judgements of their levels of clinical expertise. This consistency of agreement supported the robustness of the indicators used to establish the nurses' levels of expertise. These results also suggested that ward sisters, and the nurses themselves, were able to accurately judge levels of practice. Consideration of the nurses' levels

of expertise gave rise to particularly interesting findings in relation to the nurses' years of practice. The lack of correlation found between the nurses' years spent in practice and levels of expertise appears to be a significant finding. Of further interest is the correlation between the number of nurses completing post-basic courses and the nurses' levels of expertise. These findings offer support for the nurses' recognition , described within chapters 6 to 9, of the influence of theoretical knowledge in the development of expertise.

CHAPTER TEN:
CLINICAL NURSING JUDGEMENT: THE RELATIONSHIP BETWEEN INTUITIVE AND ANALYTICAL THINKING ACROSS THE FOUR LEVELS OF EXPERTISE

INTRODUCTION

Examination of the interview data revealed two key components to the process of clinical judgement in nursing. First, two distinct but interrelated approaches to clinical judgement were identified which related to intuition and cognitive analysis. Secondly, it was possible to demonstrate changes in the relationship between intuitive and analytical thinking in nurses' judgement as the level of expertise increased.

Analysis of the ways in which the participating nurses made sense of their patients' conditions illuminated the vital role of intuition within the judgement process. Nurses experienced strong positive and negative intuitive 'gut' feelings in relation to their patients' post-operative conditions. Positive intuitive feelings evoked a sense of happiness about the patients' conditions and potential for their recovery. Negative intuitive feelings caused nurses to feel unhappy with 'something' in the individual patient's situation. This pre-conscious component of clinical judgement was found to be closely connected to the equally powerful process of cognitive analysis. The analytical component encompassed the conscious gathering and interpreting of clinical information to complete the nurses' judgements of the patients' conditions.

The nurses perceived that the basis of their intuitive feelings lay in unconscious recognition of the patients' clinical cues. Their ability to respond to these feelings with an analytical search and interpretation of salient cues appeared to be related to their level of expertise. As knowledge gained from theory, past clinical experience and from others deepened, nurses became more skilful at responding to their intuitive recognition of change. They demonstrated an increasing ability to search systematically to identify the clinical cues in the patients' conditions which may warrant intervention. This powerful and changing relationship between the nurses' intuitive feelings and cognitive thought processes in clinical judgement found at the advanced beginner, competent, proficient and expert levels of practice are explored in this chapter.

CLINICAL JUDGEMENT AND THE ADVANCED BEGINNER

The thoughts of the beginner nurses focused upon fulfilling the routine tasks, and monitoring of clinical observations required for post-operative patient care. However, while completing these tasks another phenomena was occurring which influenced the nurses' thought processes. They experienced vague intuitive feelings of uneasiness or happiness about the patient's status, and were unsure of what these feelings meant or how to respond to them. Negative intuitive feelings, in particular, caused the nurses to feel anxious and nervous about the patients in their care.

Advanced beginners were able to make simple decisions regarding obvious vital clinical signs which lay outside of the parameters set by other nursing or medical staff. However, their limited theoretical knowledge and experience provided an insufficient base to identify and interpret the importance of subtle clinical signs to the patients' physical or psychological condition. This in turn meant they were unable to search out the possible changes which may have occurred in the patients. An advanced beginner nurse' described her intuitive feelings of uncertainty about a patient's situation:

> Sometimes you can tell whether people are going to do really well or not ... When you pick them up in theatres. you just know there is going to be trouble ... I don't know why, a hunch probably ... It must be something to do with how they are and how they look ... I don't know ... I also think its something external, vibes. [SURGICAL 2/K/7]

Beginner nurses in the surgical wards were able to make a connection between their understanding of the patients before theatre and feelings experienced post-operatively. For them, there was an obvious and strong relationship between the patients' observed pre-operative state and the intuitive feelings they experienced following surgery. The nurses' intuitive feelings, therefore, reflected a tacit recognition of aspects of the patients' pre- and post-operative state. One nurse demonstrated this recognition when she remarked:

> My intuition tells me that [patient's name] is very upset with what she's had done ... I think it's based on the fact that before she went to theatre she was quite upset. [SURGICAL 6/A/8]

Frequently, the ITU nurses did not have knowledge of the person before theatre. Instead, they relied upon documented directions, monitored vital signs and their limited theoretical knowledge and experience with similar patients to inform their understanding of the patient's status. The nurses

intuitive feelings of vague uneasiness or happiness appeared to be connected to the 'look' of the patient. However, these nurses were only able to identify overt abnormalities in the patients' vital signs to support their feelings. An example of a beginner nurse's vague perception of a connection between the look of the patient and their intuitive feelings is included:

> You can look at them and you know that they are stable regardless of the numbers you're reading. You maybe wrong but that's why you observe them se frequently. You do get the intuition but sometimes you can't rely on it. [ITU 1/G/7]

The beginner nurses did not endeavour to assess and make a clinical judgement of the status of the patient in response to their feelings. Instead, they 'kept an eye' on the patients by rechecking routine vital signs and clinical observations specified within the post-operative care. They sought to identify clinical signs which were outside of the set parameters and thus reportable to other staff, as the same nurse noted in the following:

> Checking more frequently, glancing up at your monitor more frequently, checking your drains ... You just increase your observation of them. [ITU 1/G/8]

These nurses were very anxious, nervous and uncertain about reporting their feelings to other nurses or doctors if no changes were found in the patient's vital signs. The overriding fear of being considered 'silly' or 'stupid' made the nurses reluctant to involve others and share their feelings about the status of the patients. The impact of this powerful influence is noted in the following:

> If I couldn't find anything and I still felt funny, I might get someone else to come in and say either you are right or stop being stupid, you're just paranoid ... If you felt something wasn't right, you couldn't just leave it, even if it needed someone to tell you that it was just you being silly. [SURGICAL 2/K/9]

SUMMARY

The thought processes of beginner nurses were focused in the main upon monitoring rather than interpretation of the information gathered. Yet their pre-operative understanding of the patients related very closely to intuitive feelings experienced about the patients post-operatively. These feelings informed their understanding of the status of the patients in an obscure manner. The beginners were highly tentative and fearful of being ridiculed for expressing their intuitive feelings of concern to others without concrete signs

of change in the patients' conditions. They were unable to analyse a complex web of clinical information to understand a specific patient's situation due to their limited theoretical and experiential knowledge. The nurses responded by seeking measurable clinical signs to demonstrate concrete change in each patient's clinical condition and then involving other staff with greater expertise. Beginner nurses, then did experience intuitive responses, but were found to be followers rather than leaders in their thinking, who looked to other nursing and medical staff to make clinical judgements of each patient's condition.

CLINICAL JUDGEMENT AND THE COMPETENT NURSE

The competent nurses were still consciously attending to the routines of post-operative care but without the fixed effort of concentration found in the beginners. Instead, these nurses' thought processes demonstrated an analytical understanding of more complex relationships between abnormal clinical signs and physiological changes occurring in the patients' bodies. In addition, their growing ability in analytical thinking was accompanied by experiences of intuitive feelings about patients during post-operative care.

The nurses' intuitive feelings appeared to originate from the unconscious detection of change in the patients' clinical signs, as a result of their theoretical knowledge and previous experience of similar patient situations. The development in the nurses' knowledge guided their connection of a growing number of salient clinical details to form a web of understanding about the patient's current status. They linked clinical information to reach a basic understanding of the patients' conditions, especially of their respiratory and cardio-vascular stability and level of post-operative pain. Thus these nurses were able to make clinical judgements based on recognition of the relationship between a cluster of obvious clinical signs, other clinical information and the patients' current medical situations.

Competent nurses noted the relationship between deepening theoretical knowledge, learning from past clinical episodes with post-operative patients, intuitive feelings, relevant clinical signs and a deeper comprehension of the patients' situations. Unlike the beginner nurses, they responded to these intuitive feelings with some confidence, as they were perceived to be grounded in memories of past patient care episodes. As one ITU nurse said:

> Intuition comes from quite a lot of knowledge and experience. Looking after a lot of post-op. patients, seeing things going wrong, seeing things going right, getting on and doing things. It's not something that you can pick up having looked after two people. [ITU 3/A/7]

The competent nurses in the surgical wards also recognised the relationship between their knowledge of the individual before theatre and the intuitive feelings experienced about the person post-operatively. As one nurse remarked:

> You have intuitive feelings ... It depends on how well you know the person pre-operatively. This lady was premeded by the time I came onto the ward this morning. So I didn't really get the chance to know her. If you know the patient well enough before the operation, yes, it happens. [SURGICAL 5/I/8]

The competent nurses clearly connected the initial look of the patient with the feelings they experienced about the person. The nurses' increased theoretical knowledge and previous clinical experiences informed their interpretation of the patients' specific clinical signs. The nurses' growing ability to interpret subtle clinical signs in the patients is noted in comments such as the following:

> It's just the feeling that something's wrong. There's something, it might be coming up as a clinical sign, or you just might not be happy [with the patient] . So much is going on in the bedspace that you need to tune in with the [clinical] signs [of the person]. And yet it might just be a gut feeling. [ITU 1/E/5]

The nurses' responses to their feelings were interconnected with their ability to interpret the clinical information to make an accurate judgement of the patients' physical status. They felt able to recognise and manage the patients' changing status in a more effective and skilful fashion than the beginners. In this way, these nurses responded to the intuitive feelings with a more precise analytical search using their increased knowledge to try and identify, and then interpret, any clinical changes which would lead to a fuller understanding of the patients' conditions. They confirmed the vital signs were within accepted parameters and monitored the patients more closely. The nurses still lacked the depth of knowledge and experience required to recognise the relevance of subtle changes in complex patient situations. However, they were able to identify some signs suggestive of deterioration and prepare mentally for changes in the patients which were likely to need rapid intervention. A nurse

described her effort to interpret the significance of a patient signs in the following way:

> I'd probably double check everything and be extra extra vigilant. Try and see things from your charting or your observations, try and think what might happen so you are ahead of it. [ITU 1/L/6]

Another nurse noted:

> If their observations are okay, everything is stable, I wouldn't respond. But I would be prepared mentally for something later on. [SURGICAL 4/D/8]

Competent nurses had greater confidence in their intuitive feelings, knowledge, experience and observational skills to make clinical judgements than beginners. They recognised the relationship between intuition and recognition of change, and would approach senior nursing and medical staff with greater confidence in their judgement of the patients' conditions. In this way the nurses would seek confirmation of the correctness of their interpretation of the changes in the patients' conditions. However, medical staff who were sceptical had a detrimental effect on their confidence in their judgement of the patients' situations. As one nurse commented:

> I would ask somebody else who knew her to come and assess her. It depends on your rapport with the doctors, if they trust your judgement. If they don't go along with your feelings, it erodes your confidence a little. [SURGICAL 2/J/7]

SUMMARY

Having mastered practical tasks, the competent nurses were able to identify and interpret the significance of specific clinical signs in patients undergoing similar surgery. Deepening theoretical and experiential knowledge, synthesised through reflection, informed their awareness of the relevance of some clinical cues as well as obvious changes in the patients' vital signs. These nurses had growing confidence in their intuitive feelings, as they were perceived to be evoked by knowledge, experience and information of the patients' current conditions. They sought to link intuitive feelings with changing clinical signs to make simple judgements of the patients' status.

Like the beginner nurses, pre-operative knowledge of the patients strengthened the competent nurses' belief in their intuitive recognition of the patient's condition. However, competent nurses had the ability to make a more

controlled and analytical search for recognisable clinical changes in the patients' conditions. Their ability to identify and interpret available information to judge each patient's situation was limited only by their depth of theoretical and experiential knowledge in the field. They had gained sufficient confidence to respond actively to intuitive feelings by approaching senior nursing and medical staff to discuss their judgement of the patients' conditions. However, they found a dismissive reception from other health professionals to be quite damaging to their burgeoning belief in their ability to make sound clinical judgements.

CLINICAL JUDGEMENT AND THE PROFICIENT NURSE

Proficient nurses experienced intuitive feelings through rapid and unconscious recognition of the stability of the patients' conditions based on their knowledge and experience. They described the immediacy of intuitive feelings as they looked at the patients and noted their clinical signs during the completion of the tasks and observations of post-operative care. Intuitive feelings provided a sense of swift understanding of each patient's overall physical and psychological status, and gave direction for assessment of other clinical signs during recovery. Verbal, non-verbal and physiological cues were considered to identify physical changes and signs of pain, fear and anxiety in the patients.

These nurses perceived that knowledge, observation and experience informed their intuitive recognition of the relevance of clinical signs and their significance for patients within their field of practice. However, they did find it difficult to explain the knowledge and experience that underpinned the intuitive elements of their understanding of the patient's condition. Even so, they had sufficient confidence in their intuitive feelings to ask others to assist them in analysing and interpreting clinical cues to make judgements about patients with complex post-operative situations. As one nurse noted:

> It is based on lots of knowledge and experience ... It's quite difficult to make concrete or tangible that knowledge ... I think that we need to acknowledge intuition and where it comes from. It has quite a large part to play in assessment. [SURGICAL 4/G/10]

A proficient nurse's rapid observation and intuitive understanding of a patient's situation produced a positive sense of problem-free recovery, or a negative sense of difficulties to come in the post-operative period:

> When they are right like him you immediately walk in and think great no problems. You feel they are not going to have a bleed, you feel they are not going to need anything really. Just going to sleep their way through and that everything is going to be fine. [ITU 3/D/9]

The proficient surgical ward nurses, like nurses at other levels, found meeting the patient pre-operatively helped them to gather an understanding of the potential for recovery in the patient following theatre. As one nurse remarked,

> Seeing patients before they went to theatre, you could always get a feeling how the patient was going to recover ... You just get a gut feeling as to how people were going to cope with surgery. [SURGICAL 4/G/8]

Without this opportunity, proficient ITU nurses used the first few hours following arrival to gain a greater understanding of each patient's condition. Their intuitive feelings were considered along with previous knowledge and an increasing understanding of the patient's current physical status. A nurse described this relationship between her intuitive feelings and her growing cognitive understanding of the patient as follows:

> Once I tune in to somebody and I know him for several hours then I think I can trust my intuition more. Because then I have the background actually measured and looked at and experienced. [ITU 3/C/9]

The nurses responded to their feelings of concern by taking an outsider's view and stepping back from the patient's situation. They would stand still at the bedside to contemplate and interpret the patient's total clinical picture or trend in recovery to make a clinical judgement. The proficient nurses described the process of experiencing intuitive feelings of concern, and then working through conscious analytical steps to reach an understanding of the physical basis of the feelings, in the clinical cues of each patient. As one nurse recalled:

> Often what I will do is just try to take a step out and look at the patient and say, 'What is it? Why am I feeling like this?' [Just] to see whether it was anything that I could put my finger on. Does the patient look red or flushed? Does he look clammy? I look for concrete evidence with observations but also I'll try and look at the person himself.
> [SURGICAL 4/G/9]

The intuitive feelings experienced by these nurses triggered a search for the cause of concern in each patient's clinical signs. The nurses then drew on

theoretical and experiential knowledge to guide their search for concrete evidence. One nurse, responding to gut feelings, described searching for the signs in the patient in this way:

> Sometimes you think, I'm not happy ... It's not always based on something you could put your finger on. You just think, 'No something's not right', or you start looking for something and you don't know why. Then you start thinking, 'Why aren't you happy with him?' . Sometimes they're feelings of, you can't turn your back on them, apprehension, sort of scared for them, what's going on? ... Other times it's like a feeling of doom you just sit and watch and sometimes it happens. [ITU 1/N/11]

Proficient nurses found that slight changes in a myriad of clinical signs such as skin colour, posture or verbal responses of a patient, rather than measured vital signs, were sufficient to provoke and support their intuitive feelings. The difference between the cautious concern of the competent nurse and the clarity of understanding in the proficient nurse was demonstrated in the following:

> In years gone by I would say to a doctor, 'I don't know why but I think something's wrong ...' Now its based more on clinical assessment . Vital signs may be absolutely fine and yet you have that feeling that the patient isn't quite right. It can be from touch, from change of personality of the patient, from lack of urine output or too much wound drainage, from the feel of their skin or the tone of their body or the tone of their voices or the things that they're saying.
> [SURGICAL 2/A/6]

Proficient nurses had learnt through previous experience to act on their intuitive feelings by preparing for rapid intervention in the face of potential deterioration in the patient's'status. At this point a proficient nurse's analytical search for clinical signs may have identified only the most subtle changes in a patient's condition. These changes may not be seen as sufficiently significant for intervention by the medical staff. Regardless of a negative reaction by medical staff, the nurses would back their feelings of concern and quietly prepare other staff, the patient area and equipment for rapid intervention in the patient's care. As one nurse commented:

> Once I get the feeling, I will follow it up with the patient, and when the doctors appear I will call it to their attention ... Very often they disagree ... I prepare for what's going to happen so that when it does I have it right at my fingertips . Ninety-nine per cent of the time it comes exactly as you worried it would.
> [ITU 1/U/12&13]

SUMMARY

The proficient nurses experienced intuitive feelings as a swift comprehension of the status of the patients on arrival to the ward. They believed these feelings were based on the rapid recognition of subtle clinical cues seen in the patients. The relevance of these cues to the nurses was based upon their in-depth knowledge, synthesised from theoretical aspects of continuing education, clinical experience, from the advice of others and prior knowledge of the patient. As a result their confidence in the relationship between their intuitive feelings and changing status in the patients was much stronger than the competent nurses'. The nurses responded to these feelings by initiating a search for clinical clues and 'reflecting-in-action' to clarify the changes in the patients' conditions.

Proficient nurses were found to remove themselves physically from the activities at the bedside to stop, reflect and consider alternative views of the complexity of each patient's situation. Within this process the nurses sought to identify, through their knowledge, the subtle clinical changes that could forecast alterations in a patient's status. At the same time the nurses tried to gain a sense of the person as a complete individual. These nurses had greater confidence in their intuitive judgements and their ability to identify early signs of deterioration in a patient's condition. They would collaborate with more senior staff and, irrespective of medical opinion, prepare for action in response to the anticipated deterioration in each patient's physical condition.

CLINICAL JUDGEMENT AND THE EXPERT NURSE

The expert nurses experienced powerful and immediate intuitive feelings in relation to the status of the patients as they arrived into their care. Their intuitive feelings appeared to spring from unconscious recognition of important subtle clinical cues in the 'look' of the patients. At times, they were able to recognise a web of subtle clinical cues within the context of a patient's peri-operative situation, as a result of their knowledge and experience. On such occasions they were able to identify major problems rapidly and co-ordinate the activities of nursing and medical staff during interventions affecting the patient. However, they also recalled episodes when there were no measurable changes for medical intervention and their negative intuitive feelings had preceded changes apparent later in patients' recovery periods. The latter was a source of frustration to these nurses who had experienced strong feelings of impending change prior to each patient's deterioration.

The expert nurses understood the meaning and significance of the clinical observations for the individual through contextual application of deep knowledge of similar situations and likely outcomes of care. They knew which clinical signs to look for and how they expected the patients to react within their current situations. Subtle changes in signs accompanied by further salient information gained from other sources were integrated and interpreted within the nurses' continuous assessment and judgement processes as they carried out activities of care. At times of uncertainty and intuitive concern, these nurses also discussed 'stepping back' to reflect on the 'trend' and 'total clinical picture' of the patient over a period of hours or days of care.

The expert nurses' deep understanding of the complexities involved in recovery informed their judgement of the patients' chances of improvement despite unstable vital signs and poor medical prognoses. As a result, these nurses often experienced either positive or negative intuitive feelings concerning critically ill and unstable patients, depending on the individual's current status, drive to recover and the changing nature of the clinical situation. The following example demonstrated an expert ITU nurse's belief in a positive outcome for a patient with a poor medical prognosis:

> It feels as though no matter how critically ill the patient is you still have the feeling that the patient will pull through. I think it is based on a little of experience and a little of thinking it through and believing this person is positive and wants to live. [ITU 1/D/6]

The expert nurses were able, through in-depth knowledge and experience of common trends in the patient group, to relate their feelings to a myriad of physical signs found in the look of the patients, suggesting very subtle changes in condition. As one expert nurse put it:

> You always express it as a feeling, but you think, you look at the patient and you say, 'He doesn't feel as if he's as well as the observations are telling you he is.' I say, 'Well, I know his blood pressure is all right but he feels a bit cold to me. But the temperature is telling me he's fine or his gases are fine, but his colour looks a bit off to me.' [ITU 1/P/12]

The expert ITU nurses expressed an increasing confidence in the relationship between their intuitive feelings and knowledge of the patients' physical status over an extended period of time. One of the nurse's described this confidence as follows:

> I think that those feelings come and they're usually more cemented the longer you are with the patient, in that you know what is a normal, acceptable base for that patient, and anything that is adverse to your normal, if you like, in inverted commas, findings tends to just reinforce your initial instinctive feelings. [ITU 1/J/6]

Expert nurses were able to explicate further the salient and subtle cues suggested by the look of the patients that provoked their intuitive feelings of concern. They could recognise the potential of an impending crisis in a patient's condition which required swift medical and nursing attention and intervention. These nurses could describe some of the subtle changes that provoked intuitive feelings of concern in the following:

> Intuitive feelings that you have are things that you have learnt from experience. I can look at a patient and know whether I think that there's something not right with them. You can tell by little things, just by looking at what their colour is and what their breathing pattern is .and how they feel. You can get a feel for how people are. I think it's definitely tied to the physical signs that you can pick up. But also you have a feeling of when you feel happy with somebody and when you're anxious that they may not be very stable.
> [SURGICAL 2/H/6]

Familiar patient care situations evoked the same intuitive feelings in these nurses, who recalled vivid memories from years past of similar experiences, actions taken and patient outcomes, and responded with speed and certainty. These nurses worked with other nursing and medical staff to treat emerging problems in each patient's condition on the basis of their rapid judgement. The speed of this connection between knowledge, interpretation of physical signs and intuitive feelings to reach a judgement of the state of the patient was demonstrated by a very skilful expert ITU nurse who observed:

> It's more than a gut feeling. You know immediately you just know. I mean you just see, its there. You can have a tachycardia, you can get a related hypovolaemia and you see a litre of blood drains away and you know exactly what's happened in the patient. He's developed a loose graft or there's a bleeding vessel and you need to pour in the volume and get the surgeon and open the chest and sew up the hole or repair the vessel. That's happened once or twice in the nine years I've been here. But you always feel you'd know it straight away and you know its theatre, quick. Get the team up here and open the chest and make sure you put the volume in. It's tied up with the gut feeling, and you can just see it. [ITU 1/C/8]

SUMMARY

The expert nurses often made rapid clinical judgements which involved intuitive feelings and swift conscious identification of clinical changes noted in the look, posture, behaviour and responses of the patients. These nurses were confident in the validity of their intuitive feelings of concern, and perceived their basis in unconscious recognition of subtle changes in the patients' clinical signs. Further, the nurses' intuitive feelings provided the impetus for the commencement of an analytical search for concrete clinical evidence prior to deterioration in the patients. The trends in both clinical signs and the overall picture of each individual were considered in relation to the nurses' theoretical and experiential knowledge of similar patient situations.

The experts, like the proficient nurses, had the capacity to stand back for a moment when faced with a perplexing patient situation. This 'stepping out' or 'reflecting-in-action' provided the time and opportunity for the nurses to reach a fresh understanding of the patient's current and complex post-operative situation. During this process the nurses drew on in-depth, synthesised knowledge to identify the salient features of the patients' situations.

They extracted the salient details from many sources and interpreted this information to make judgements which were bound within the current context of the patient's situation. The expert nurses' judgement was valued, respected and called upon by other medical and nursing staff. Intuitive feelings were respected and recalled from past experiences when they had preceded rapid deterioration in a patient's condition. Doctors with whom they sustained a trusting and collaborative relationship would respond swiftly to expert nurses' intuitive judgements, with confidence in their accuracy.

CHAPTER SUMMARY

These findings offer revealing insights into the nature of the intuitive and cognitive processes which come into play during the development of nurses' clinical judgements. Deepening knowledge emerged as the key to the nurses' judgements and development of clinical expertise. Expert nurses identified how the continual process of knowledge development underpinned their ability to form accurate judgements in complex patient situations. They perceived an increase in speed and accuracy in clinical judgement as they became more knowledgeable in their field of patient care. The ways in which

the nurses' clinical judgements developed through recognition and response are summarised below.

Progressive deepening of experiential and theoretical knowledge underpinned the judgement ability of the participating nurses at each of the four levels of expertise. These nurses were able to focus more effectively on the patients' clinical signs, behaviour, responses and concerns as they developed practical 'know-how' of the technical tasks of care. Simultaneously, the nurses' understanding of the relationship between specific clinical signs and physiological changes in the patients improved as their level of theoretical knowledge increased. Concurrent growth of experiential knowledge informed and enhanced each nurse's ability to recognise subtle variations from those familiar clinical patterns of patients in similar circumstances.

Effective synthesis of these forms of knowledge occurred when the nurses reflected upon a spectrum of patient situations. Nurses in this study who developed the ability to reflect effectively were able to recall very specific details of past cases when faced with a similar patient in their care. Knowledge of these patients' problem-free recoveries, rapid deterioration or sudden improvement was recalled without conscious strain. The nurses' unconscious awareness of the significance of clinical information, such as how the patients looked, behaved and responded at specific stages of their illness or recovery, altered as a result of increasing knowledge of this nature. This sudden awareness was experienced by nurses as intuitive feelings in which unconscious recognition of subtle changes (improvement or deterioration) were identified in the 'look' of the patients. Yet these subtle changes were often not immediately detectable through alterations in the patients' vital signs.

These nurses began to respond to intuitive awareness with analytical thinking from the advanced beginner level of practice. They became aware of increasing speed, accuracy and confidence in their intuitive understanding as a result of deepening knowledge and experience. The nurses' confidence grew as their intuitive judgements were validated in repeated patient cases. The nurses grew steadily more skilled at deliberating effectively on each individual's case. Their intuitive ability to recognise a clinical 'picture' made the process of complex decision-making quicker and easier.

The skilled nurses had a high level of self-confidence when their intuitive judgement had pre-empted detectable changes in the patients' status on multiple occasions. Nurses who had experienced many of these situations responded to colleagues' intuitive awareness by pooling their knowledge. Together they sought to identify the changes through an analytical examination of the patients' clinical signs. A tacit trust in the legitimacy of intuitive judgement was clearly evident in this frequently used group response by skilled nurses within the study.

The nurses' ability to respond to intuitive feelings with an effective analytical search to form a complex clinical judgement of a patient's situation varied according to each nurse's depth and synthesis of knowledge. The level of knowledge determined each nurse's ability to consciously search for, and identify, relevant clinical cues. Thus those nurses who had very limited knowledge were only able to make simple and straightforward judgements of patient change in practice.

Alternatively, the proficient and expert nurses, when faced with vague and confusing signs of possible change in status, demonstrated the capacity to step out of the action and consider the complexities involved in the patient's situation. These nurses were able to identify obscure trends across the patient's trajectory of recovery. They discerned the importance of these trends for the patients as they reflected on the clinical pattern of cues against their background knowledge of past cases.

The pinnacle of this developmental process was found in the speed of recognition and understanding in the expert nurses' judgements. Cases where nurses detected early signs of impending and serious deterioration in the patient requiring immediate action provided vivid examples of this ability. The expert nurses intuitive recognition and analytical response occurred so rapidly at times that these processes appeared to be fused. The result was fluid, intuitive judgement and rapid, intelligent action during the experts' practice.

The findings of this study support the view that ability to form a clinical judgement goes hand in hand with a nurse's level of expertise. It was also clearly apparent from these findings that the prevailing traditional 'scientific' ethos sanctified analytical thinking to the detriment of all other forms of

knowing. This dominant view forced these nurses to be quite covert in their use of intuition within their judgements, regardless of their level of expertise. These findings have identified that intuition both informed and enhanced the nurses' logical thoughts during the judgement process, and as such should not be denigrated or devalued in nursing practice.

CHAPTER ELEVEN:
THE EXPERTISE JIGSAW

INTRODUCTION

In the preceding chapters an attempt has been made to track how the nurses' knowledge impacted on their clinical judgements and levels of expertise. This chapter draws from the previous findings to demonstrate how theoretical and experiential knowledge, motivation and commitment to the development of practice provide the underpinnings of the nurses' clinical judgements and levels of clinical expertise.

Selected case studies are presented in this chapter to demonstrate the interaction between motivation, knowledge and clinical experience and how nurses may (or may not) be likely to progress from one level of expertise to the next. These case studies provide support for the robustness of the idea of a continuum of expertise, and further confirm the key influences in the development of skilful practice. Seven case studies are presented, two from the advanced beginner level, two from the competent, two from the proficient level. Two are presented at each level to show one nurse at each level who is demonstrating evidence of increasing expertise and one who is not. The seventh and final case study incorporates a representative who has reached the expert stage of the continuum.

CASE STUDIES OF NURSES DEMONSTRATING THE DIFFERENCES FOUND BETWEEN LEVELS OF EXPERTISE

The following seven case studies illustrate the factors which influenced nurses' trajectories through different levels of expertise. Four case studies provide examples of nurses at each of the four levels who were motivated toward continued learning and committed to deepening their knowledge for practice - factors which underpinned likely progression along the continuum of expertise. Also included are case studies of advanced beginner, competent and proficient nurses who had spent a greater number of years in clinical fields, but did not feel motivated or committed toward ongoing learning and further development of practice. These nurses demonstrated static knowledge bases, and as a result appear less likely to progress toward expert level of clinical practice. The final case study provides a rich demonstration of how

the knowledge displayed in an expert nurse's narrative and in the skill of her clinical practice was developed and maintained.

The nurses' names have been changed in the interests of anonymity. Each case study incorporates demographic details and excerpts taken from interviews which relate to the participants' years since registration and educational background, including post-basic courses, academic qualifications and ongoing professional education. Examples of the nurses' knowledge base taken from the assessment interview were summarised within each case study. Also included are comments related to motivation and commitment to practice, interests in other careers and personal responsibilities. Finally, these nurses' reflections on knowledge gained through learning from others and from their own clinical experience are considered.

ADVANCED BEGINNER - KEEN TO LEARN

The following case study incorporates excerpts taken from an interview with a participant who was identified as an advanced beginner in the ITU. These excerpts demonstrate the important factors which influenced the level of this nurse's clinical expertise and give a clear indication of why she has the potential to progress.

At the time of the interview, Susan was twenty-four years of age and had worked full-time as a qualified nurse for just over two years. During that period she had spent eight months on a surgical ward with six beds designated for high dependency patients. She then entered her major field of interest, intensive care, and spent eighteen months in a general ITU of a district hospital which drew patient admissions from the medical and surgical wards and casualty. It was also the regional renal unit which cared for patients from the surrounding area with renal and respiratory failure. Susan had spent only one month in her new post within a busy general ITU of a large London hospital.

Susan described following guidelines with medically set parameters for effective monitoring of the patients. This task focus blended with knowledge of routine actions to take in relation to obviously abnormal findings. Susan was able to make an analytical response to overt clinical changes identified from these measurements using her limited knowledge base. As she put it:

> You can normally tell if you are going to have problems or not, and try and sort out those problems before they actually arise ... I don't really have a set pattern, things just take over and you just tend to slot in and deal with whatever is the most pressing thing at the time. (ITU 3/J/1&2)

At the same time Susan was aware of intuitive feelings related to the look of the patient which were informing her understanding of the person's status:

> You've got a patient who comes back and they look grey and almost on death's door and you know that something is going to happen. I mean you don't know. I suppose it's like a sixth sense. (ITU 3/J/7)

Susan was very enthusiastic about her work and the specific field of nursing practice,

> Intensive Care was what I had always wanted to do from starting nursing. (ITU 3/J/10)

However, Susan felt she had only just begun to learn from her short period of time working in a critical care environment and was committed to hands-on participation in everyday practice to develop her clinical expertise:

> You can never have enough practical experience and I haven't been that long in ITU. (ITU 3/J/10)

Her narrative was threaded with comments on contemplated career moves which related to the importance she placed on learning from exposure to a wide variety of experiences with different patient and health professionals:

> I think you just need to change units, like to Cardio-thoracic next. (ITU 3/J/10)

Watching other qualified nurses and incorporating their methods into her own practice was an important mode of learning for this nurse:

> When I first came into ITU, I was taught by following people. You watch how they do it. They give you a structure and then you can develop ... adapt from what people have taught you to the way you feel is easiest and best. You remember when to do something and you know you must do it immediately ... .I learnt from watching people. How they react in situations, how I react in situations and just learning practically. You have your text book to back up your knowledge but developing methods has to come from yourself and watching people. (ITU 3/J/3&7)

Gaining a deeper understanding of theoretical knowledge to underpin her practice in critical care was important to Susan. She had participated in a staff development course and was currently enrolled in a mentorship programme. She had also attended several study days related to the critical care field, for example an organ donation awareness and electrocardiograph (ECG) workshop. Entry into the ENB recognised Intensive Care course requires nurses to have worked in Intensive Care environments for over one year. Susan was keen to pursue this educational pathway:

> With me it's theory. I really need to learn a lot, which is why I'm trying to get on a (ITU) course. You need a very good background in theoretical knowledge. .I haven't quite got the knowledge to decide when I should do something first based on the anatomy and physiological signs of the patient. (ITU 3/J/10)

Susan's narrative demonstrated the advanced beginner's characteristics of task focusedness and dependency on guidelines and on others for direction in most decision-making in practice. Yet early evidence of analytical and intuitive decision-making skills were also evident. There was also striking evidence of how motivation and interest in critical care nursing had driven Susan to pursue a career in this field. Her keenness to develop further knowledge and skills had led her to pursue active learning from others, from her own practice, from theoretical sources which were currently available and to seek avenues of further formal education in the field. This level of commitment to learning and practice suggested that Susan was likely to progress swiftly in terms of the level of her clinical expertise.

ADVANCED BEGINNER - NOT YET PROGRESSING TO COMPETENT

The following case study incorporates excerpts taken from an interview with another participant identified as an advanced beginner in the ITU. These excerpts provides clues as to why this nurse had not yet progressed beyond this level.

At the time of the interview, Natalie was twenty-seven and had been registered as a qualified nurse for six years. During that period she had worked in a cardiothoracic Intensive Care environment for twelve months, followed by a four year break from nursing. Natalie had recently returned to work as an agency nurse in an ITU. She described thoughts which focused upon following set guidelines and completing tasks to monitor and manage the

care of the patient. Yet there was also evidence of simple analytical judgement made explicit in her description of an assessment of a patient who had undergone a pneumonectomy,

> I looked at the patient to see how well perfused he was. His colour was fairly good and I also said, 'hello, the operation is finished,' just to see how conscious he was. [He was] fairly sleepy. He had a ventimask on and [I was] watching his respiratory rate to see whether he was actually breathing properly . (ITU 1/H/1&2)

Natalie was aware of sensing intuitive feelings in relation to the condition of patients, but she felt she could provide a logical rationale for these feelings based on observable changes:

> I think you do sense it. If you think a patient is going to be one of those patients you are going to have problems [with] from the start. Though the good thing is you can say, 'Because he did this, this is why I felt this way' . (ITU 1/H/5)

One of her primary sources of learning was through the observation and copying of others in practice. The nature of care was initially understood in terms of gaining confidence and mastery of a series of technical skills. This mode of learning provided this nurse with the skills to give safe, basic care of the post-operative patient:

> It's the way I've seen it being done, Sisters have approached it that way and I've just done the same ... I used to work in a cardiothoracic unit where patients come from theatre and you would be expected to help the Sister. You were basically doing things with her, watching what she was doing, and then the next time I'd do something different with her. We were told initially that, 'you can be in charge today of the drains' or 'do the observations and everything and I'll do the drains'. That was the way I was taught to take part [in the care of] the patient ... Those Sisters are the practical role models in the wards. (ITU 1/H/2, 3&4)

Natalie had also gained clinical knowledge from her own experience, which built on the initial understanding provided by other nursing staff:

> You learn so much more from practical experience than you do from textbooks ... You learn the basics from people like Sisters, and then you just do things when you think they should be done. As you go along you adapt your own.
> (ITU 1/H/4&5)

Theoretical knowledge did not figure as an important source for this nurse's knowledge for practice. Natalie's only qualification had been an initial pre-registration hospital-based programme, and she expressed no interest in undertaking further study in the field. This nurse showed little understanding of how an intensive care-related course could be of use in her work:

> I suppose the courses make sure you're doing things in the right way. I suppose they open your eyes to new ways of doing things ... I don't really know, I haven't been on any courses. (ITU 1/H/3)

Natalie's narrative demonstrated the advanced beginner's characteristics of task orientation, dependency on guidelines and on others for direction in practice and early analytical and intuitive decision-making skills. However, unlike Susan's case, there were no indications of motivation or interest in further development of the clinical knowledge which had been learnt from her own and others' practice. Theoretical sources and avenues of further formal education in the field remain untouched by this nurse with an apparent lack of interest. Natalie's limited knowledge, noticeable in her assessment of the patient, was clearly based on initial learning from others and some clinical experience in the same field. It would appear that at that point in time Natalie was content to provide basic care for patients undergoing familiar surgery without making any active effort to progress in her knowledge, skills and clinical expertise.

COMPETENT - UP AND COMING

The following case study incorporates excerpts taken from an interview with a nurse who demonstrated the characteristics of functioning at a competent level in a surgical ward. The excerpts demonstrate this nurse's dynamic and growing knowledge, which was building as a result of her keenness to become more skilful in her practice.

At the time of the interview, Kate had been in her first staffing post for nine months, after spending four months working on the same ward as a senior student nurse. She clearly followed guidelines to establish the nature of the patient's vital signs following a partial pancreatectomy. However, there was also a noticeable increase in flexibility, as Kate identified the patient's capacity to sit up, the strength and adequacy of his breathing and coughing and the range of his blood sugar. There was also clear evidence of Kate's use

of clinical knowledge to analyse the likely causes of overt abnormalities in the patient's signs and their importance to his overall status.

Kate had learnt the basic guidelines of care as a student during the pre-registration programme. However, she was also aware of 'knowing' what to look for without the need for constant written prompts to guide her practice:

> We're taught as students in the post-op. with that kind of format. You get on the surgical ward and it's a logical way you can go through it. I don't actually pick the care plan up now. You are used to what you're looking for and what you need to know . (SURGICAL 2/D/2&3)

Kate was also aware of experiencing intuitive feelings which she felt emerged from knowledge gained from experience in the field. As she noted:

> You can look at someone and see if you think they're in pain, faint, shocked in any way ... It could be very subtle variations of observations at the time. They're still satisfactory but [it] may be enough to worry you ... That comes from experience ... If you've been looking after people with a similar condition for a long time, it happens. You are going to have a better idea of what is going to happen and then you might be able to find those first signs that make you think, He's not quite right. (SURGICAL 2/D/5&6)

The influence of registered nurses who guided Kate's initial learning of caring for post-operative patients was vividly recalled:

> On the ward as a student you tended to do it with the staff nurse that you were on with, perhaps using the care plan but not always ... They were there to teach you how to do it, so obviously you were following their example, how they said to do it and what they did. (SURGICAL 2/D/4)

Kate expressed a sense of confidence and understanding of patients undergoing similar surgery, and her ability to detect major areas for concern after twelve months in the field. Experience had provided the knowledge of what was safe and familiar within the patient's care:

> I've worked in the area for quite some time now. I'm quite familiar with the operations we do and the conditions that we get. I've seen the recovery people make some successful and some unsuccessful, and I know what I'm looking for with the condition, what's acceptable, what's not acceptable. I think I'm more safe and know what I'm doing, although there is room for increased knowledge and increased expertise. (SURGICAL 2/D/7)

This nurse also identified a need to increase her theoretical knowledge in the field to further develop her clinical expertise:

> I would like to develop more detailed knowledge of the actual anatomy of the GI tract, of drugs used and the actual conditions of the patients. There is scope for a more detailed knowledge in those areas. (SURGICAL 2/D/7)

Kate had been qualified for only nine months and yet demonstrated a competent nurse's ability to detect and respond to clinical signs in patients undergoing similar surgery. Knowledge and understanding of the field had given her confidence in her ability to identify patients' basic problems and act effectively. This nurse was aware of her knowledge deficits and the need to deepen her theoretical knowledge to improve her practice. A keenness to learn was detectable in her desire to participate in professional development programmes and study days which would inform her practice. It thus appears likely that Kate's positive approach to her work and keenness to learn would foster progression to a more advanced level of expertise.

COMPETENT - HAPPY WITH THE STATUS QUO

The following case study incorporates excerpts taken from an interview with a second nurse who also demonstrated characteristics of competent level practice in an ITU. The excerpts provide hints as to why this nurse was at a standstill at this level of expertise.

At the time of the interview, Chris was fifty and had been registered as a qualified nurse for over twenty years, working for eighteen of those years within the Intensive Care environment. Following qualification she had spent approximately six months working as a staff nurse in a surgical ward. The next twelve months were spent completing a midwifery programme, followed by a break and then an Intensive Care course of six months. Chris worked mostly in Intensive Care for a further four years, then was employed as a Sister for almost two years in general hospital wards. She then returned to working within Intensive Care areas, where she has remained.

Chris's narrative demonstrated a strong focus on achieving the tasks of post-operative care. Accompanying this role was evidence of a greater awareness of patients' clinical cues than those found in a beginner nurse. However, this awareness of a patient's individual status was secondary to her focus on

following the directives given by the medical staff. Expectation of the patient's progress through the post-operative period was linked to experiences of caring for patients who have undergone the same surgery with the same surgeon and anaesthetist.

There was some evidence in Chris's narrative of the use of judgement in considering the parameters set by medical staff and the patient's vital signs, fluid measurements and amount of each drug to be given, as may be seen in the following:

> Then I attach the fluids and according to the vital signs, mainly the blood pressure I go for the support drugs. This patient came back with Dopamine ... also on Trydil and so we juggle between the two ... I think in this case his Dopamine is a renal dose and so the anaesthetist has just put it on and left it at six so all through we are juggling it with the Trydil and the blood pressure was high but the anaesthetist still maintained the Dopamine at six ... Then the consciousness of my patient, I tend to see if they are responding [to being spoken to] after putting them on to the monitor ... [Checking] what their resps. are. From there decide whether to sedate the patient or try and wake the patient up. Depending on the anaesthetist, if she doesn't want them ventilated, then you try and wake them up and give them something for the pain. (ITU 1/K/1&2)

Intuitive elements of judgement were also noticeable in Chris's description of episodes from her practice. These episodes demonstrated an awareness of feelings which related to potential changes in the patient's status. Chris's belief in these feelings were reinforced by the patients' later deterioration:

> Sometimes you have a patient, vital signs are all right, everything about them is all right, but they just have this look. For instance, last week a patient who could speak English was very quiet and the heart rate was really not stable that was the only variable there. And I just had this feeling that something was going to happen to this patient and it did. I think having seen a lot of patients that these things happen to, sometimes you can't just pinpoint the problem, but just that look, you just feel that something's not right ... (ITU 1/K/10)

The routine nature of her work was apparent and there was little evidence of keenness to learn after so many years caring for similar patients. Chris identified deficits in her knowledge that she would need to attend to increase her level of expertise:

> There is a lot I don't know. I wouldn't class myself as a beginner or an expert person. My biggest problem is the need for greater knowledge of physiology, like respiration. (ITU 1/K/11)

Chris was aware of gaining experience through working in Intensive Care units in a number of countries. She felt these opportunities to observe, participate and learn from the practice of others had been helpful in the development of her clinical knowledge:

> We were taught [after registration] ... in my training [learning to listen to] breath sounds wasn't done. Now, when the patient is extubated and they have chest drains in, with my experience overseas I can tell [what] some of the breath sounds [mean] and I can encourage [and show] the patient how to cough. That experience helps quite a bit. (ITU 1/K/9)

Chris recalled learning from other nurses during the intensive care course. The tutors demonstrated how to combine technical and practical skills with sound theoretical understanding of the needs of the patient. These examples left lasting impressions, as demonstrated by Chris's reflections on her initial introduction to Intensive Care nursing:

> You learn fifty per cent from the role models and fifty from the course ... When I just started and the patient comes back, it's a great big deal and I watched this nurse take a patient. She asked not to have anyone with her and she was so calm, everything was done. So I learnt. (ITU 1/K/7)

The Intensive Care course, although undertaken many years previously, was the source of much of the theoretical knowledge which Chris considered essential for critical care nursing:

> If I didn't do the Intensive Care course I wouldn't work in Intensive Care. I feel the initial learning should start with a course to work here ... It's such a long time ago, but my tutor taught me how to assess and care for the post-operative patient. I don't think I've changed. (ITU 1/K/4&7)

Chris demonstrated a competent nurse's ability to focus more on the patient than tasks and to make decisions within the set parameters of post-operative patient care. She was also more aware of the changing status of the patient in relation to subjective clinical cues. The intuitive elements of Chris's judgement of change in a patient's condition paralleled her awareness of these cues and recollection of similar past experiences. This nurse had many years of experience within similar ITU settings in different countries and had completed an Intensive Care course many years previously. However, absent from her discourse was any desire to update the theoretical knowledge which underpinned her practice through educational pathways outside of the workplace. Instead, Chris depended on knowledge gained from experience

with patients having similar surgery, medical and nursing staff to guide her current practice. As a result, and despite Chris's many years of experience in the field, it appeared likely that she would not attain the advanced level of knowledge needed to progress to the proficient and expert levels of practice.

PROFICIENT - KEEN AND COMMITTED TO PRACTICE

The following case study incorporates excerpts taken from an interview with a nurse who demonstrated the characteristic indicators of functioning at a proficient level. These excerpts display the attributes of a nurse who is in the process of developing sufficient knowledge to become an expert in the field of ear, nose and throat (ENT) surgical nursing. At the time of the interview, John had been qualified for nearly seven years. He had worked for six months on an ENT unit as a staff nurse followed by twelve months on a burns/facial and plastic surgery post-basic course. This was followed by six months on a burns unit, eighteen months on a facial and plastic surgical ward, and a further two years working on a similar unit in another hospital. John had spent eighteen months in his current post as charge nurse of an ENT ward.

John described a systematic and flexible form of assessment which depended upon his observations and interpretation of the state of the patient through his knowledge of the field of care. He was aware of the intuitive elements within his clinical judgement, and described these feelings as grounded in a process of understanding based in embedded knowledge of the field of care, the person and previous experience:

> I believe intuition is based on a series of steps that you go through and become so familiar with that you can apply them in different circumstances and instantly know there's something wrong or very right. I intuitively knew he wasn't anxious, he wasn't worried, and that's based on my knowing him and on previous experience ... The difficult thing is quantifying this and saying why this is going to happen. (SURGICAL 2/E/5&6)

Learning by experience was important to John, as he had gained the knowledge of what to look for and what to expect as patients in this field of care progressed post-operatively:

> It's very much experience learned over several years, using your eyes and knowing what to watch out for, what to expect that could go wrong with a client who has had this type of surgery. ... Those are the things you need to be aware of and

> it's not until you've seen them that you can anticipate what to look out for. Reading in a textbook doesn't give you the experience of having seen it. (SURGICAL 2/E/3)

Theoretical information obtained through a specialised course supported by erudite staff in the practice setting provided John with the knowledge which underpinned his current level of expertise in the field:

> The burns and plastic course I had the time [to learn] and the staff were very good [at teaching]. They'd go through what problems to really watch out for with people who were having head and neck surgery. That was really where I got my instruction. (SURGICAL 2/E/3)

Skilful role models were recalled and the knowledge gained from observation of their practice was retained and utilised in John's current practice:

> I can think of a role model that I base [my practice] on. One of the Sisters at the course hospital was mentoring me and I saw her as one of Benner's experts. Following her through, I based some of what I've done on what she used to do, and then built on and adjusted [my practice]. (SURGICAL 2/E/4)

John was also aware of his teaching role in supporting students to develop skills and knowledge of the field appropriate to their level of education. He was very conscious of the need to provide more attention to the maturing skills of the senior students:

> For the first-year students it's really familiarisation of the nurse's role in safely caring for a client undergoing surgery and some really pick up the knowledge very well ... [Alternately] my role is to prepare the third-year student to become a staff nurse capable of safe and competent assessment ... There is a weakness there, in that with a first year student one would always accompany them to theatre to pick up a client, [while] with the senior students one tends not to do that. (SURGICAL 2/E/9)

John considered his level of expertise to be that of the proficient level because of his long association and lasting interest in head and neck surgery rather than the more specialised field of ENT surgery. John was keen to keep his knowledge up to date, and enrolled in post-basic courses which were useful to his practice, as well as attending conferences within his field on a regular basis. He noted the importance of gaining further specialised theoretical knowledge and knowledge from experience in a variety of settings to achieve an expert's understanding of this domain of nursing practice:

> In generalised ENT I'm proficient and in head and neck surgery I would regard myself as expert. I haven't done an ENT course and my main interest is burns, plastics and maxillary facial. This is a switch for me for a couple of years. I'm gaining experience ...

The same nurse continued:

> I'd probably need a wider experience of ENT to become expert. I've been in it for two years, I've seen all the types of surgery that the surgeons perform here but that doesn't necessarily mean that's everything. (SURGICAL 2/E/6&7)

John demonstrated the skilled proficient nurse's knowledge and flexible ability to be individualised in his assessment of the patient. He provided evidence of motivation and interest in seeking both theoretical and experiential knowledge from a range of sources to achieve a higher level of skill. Having worked for five years in a closely related field, John had crossed over to this less familiar environment and spent two years developing skills and knowledge. Continuation of his current post, with a clearly expressed intent to continue learning, mixed with a variation of clinical experiences, suggested a likely rapid progression to expert level of practice.

PROFICIENT - SKILLED, BUT LOSING INTEREST AND KNOWLEDGE

The following case study incorporates excerpts taken from an interview with a nurse who also demonstrated the characteristics of proficient level functioning in a general intensive care unit. The excerpts show why this nurse may not achieve and maintain an expert level of practice. At the time of the interview, Jane was thirty-two and had been registered as a general nurse for ten years. She began her career with three years in medical and surgical wards. Jane then worked on a Hepatic unit for a year followed by eight months in one ITU and twelve months in another. She then completed an Intensive Care course, working in the present unit for four months, followed by six months in an associated ITU and then returned to a F Grade post for two years. Jane then enrolled in a humanities undergraduate programme, and had worked part time since then for a period of eighteen months.

Jane demonstrated a high level of confidence and ability to assess the needs of the patient early in the peri-operative process. Jane's assessment was laced with interpretation of subjective and objective clinical cues to reach a judgement of the patient's current status and needs. Jane was also aware of

experiencing intuitive feelings in relation to the patient's current status and likely trajectory of recovery. As she noted:

> When they are right like him you think, 'Great, no problems , not going to have a bleed , not going to need anything really, everything is going to be fine. ' Other times, they just don't look right, colour usually. It's based on experience, I tell the anaesthetist that there is something wrong, but I don't know what. They come and you end up with five people going, Yes there is something wrong. [Some of the] time it is because the patient's cold and white, so they don't look right. (ITU 3/D/10)

Jane was aware of the power of intuitive awareness in relation to the potential for deterioration in patients under observation and care. This knowledge was transferred through handover report which resulted in increasing alertness and anticipation amongst the nursing staff:

> I do think [nurses] respond more ... They do move a bit quicker ... This sort of rumour goes around, especially with [patients] that come in with MIs. There are ones that you know are going to be a problem, they are not right. And so that is the way you handover [to other nurses]. 'I've got a feeling that there is something not quite right' and then the [person] gets an extra eye kept on them ... It's like a special little parcel that means [there's something] 'not quite right'. A metaphor, weird, but it does work. (ITU 3/D/11)

Jane's initial understanding of how to assess the patient had been gained from tutors on the Intensive Care course, who had provided a process which was easy to remember and follow:

> It was when I did the ITU course, the tutor from the course taught safe arrival of the patient into ITU ... They taught us how to assess ... The steps, first thing you do, make sure they are breathing, ventilating okay, listen to their chest, drains, make sure they are patent, make sure the [patients] are not tamponading, make sure they are passing urine. (ITU 3/D/4)

She was aware of how greatly her knowledge had developed to allow a much more comprehensive understanding of the patient's situation and needs than the limited focus of her student days:

> The only thing I ever worried about was the airway, and then I would take the sheet off and there would be blood everywhere and I would think, Oh God, he did go for an operation. I could only focus on one thing which was, please God, don't stop breathing . (ITU 3/D/4)

Jane valued knowledge gained from her own and others' experiences in practice:

> Experience is a major influence on they way I assess patients ... Because of the trial and error education I had as a student, you know, Whoops that [care] went wrong, years of that happening. ... And watching doctors, the way they assess patients post-op. I also learnt a lot through my clinical experience in the units [after registration]. (ITU 3/D/5, 6&7)

However, Jane felt the theoretical knowledge that she had gained from the course had been the most influential factor in the development of her high level of clinical expertise:

> Theoretical knowledge is the ground work. The practical you can get, there are nurses who work for ten years and still haven't moved on. So I do think, yes, it's the theory that is important. I certainly saw the difference in me once I learned the theory behind everything I was doing. I was ultra-confident then. I could go ahead and talk to people and argue for different care. It certainly is important in the management of the patients to me ... I did the ITU course, a tech management course, a bereavement counselling course, and a 998 teaching and assessing course which were all helpful. (ITU 3/D/12, 13&15)

Yet Jane was aware of a deterioration in her ability to recall complex theoretical elements in her knowledge base over the period of eighteen months, since she began working part time:

> If you had asked me that a year and a half ago when I was here full time I would say, [I was an] Expert. Now I only work one day a week, and I do feel I'm losing it. My practical stuff is fine. But if I have to explain the reticular formation or a weird physiological thing, to teach someone, I couldn't do it now, in the way that I could once. (ITU 3/D/10)

Jane demonstrated in-depth skill, knowledge and expertise equal to any proficient nurse in her field of practice. Her assessment skills were flexible and at the same time systematic, and she was also quite autonomous in her ability to manage a patient's care. However, she was aware of declining knowledge which became noticeable when asked to teach other nurses an advanced aspect of care. Jane felt she had achieved this successfully in the past when working full-time in the field. She was now committed to a full-time, four-year degree programme, and much of her attention was focused upon successful completion of this academic work. It would seem likely that

Jane would not continue developing knowledge and maintaining sufficient regularity in practice to progress to an expert level in her clinical field.

EXPERT - KEEN, CONFIDENT AND KNOWLEDGEABLE

The following case study incorporates excerpts taken from an interview with a nurse who demonstrated the characteristics of expert level functioning in a gynaecological (gynae) ward. These excerpts demonstrate all of the important factors which have been highlighted as instrumental in the development of an expert nurse.

At the time of the interview, Claire was twenty-eight and had been qualified for nearly seven years. Her first post had been in a gynaecological surgical ward for nine months. Claire had then been involved in a six-month pilot gynae nursing course to be run through the associated College of Nursing and several other hospitals. This was followed by a short break and then a return to a mixed medical and gynaecological ward for five months. Claire then participated in an ENB recognised gynae course involving different hospitals. She then moved to another hospital working for eighteen months as an F grade and acting Sister in a general gynae unit and clinic. Claire then took a post for two and half years in a mixed gynaecology and oncology ward. She had held her current post of ward sister of a gynaecological ward for four months.

Claire's assessment of a woman following a vaginal hysterectomy involved a flexible process of intuitive awareness, observation and questioning, gathering of data in response and interpreting the relevance of these findings for that individual. She drew on knowledge gained from courses and practical exposure to make skilled judgements on the patient's overall condition from verbal information, visual observations and measurable signs:

> In my experience, if a patient is bleeding, in pain or something is radically wrong I can tell by speaking to them, by the colour of their skin and by other visual observations. I've been doing it for a long time and have learnt that from the patients I have looked after ... There are lots of things than can go wrong even though it is a routine kind of surgery. From experience I feel confident to assess by looking at someone and talking to her. (SURGICAL 5/C/3&5)

Claire had learnt much of her clinical knowledge from experiences she had been involved in during patient care on the wards. Specific and difficult

patient situations involving rapid deterioration had left lasting memories of the clinical picture and likely outcomes of the events in Claire's mind:

> I've learnt a lot by bad experiences ... women with ectopic pregnancies [are] a surgical emergency. I can see when they are going to do it because I have seen a lot, where they have collapsed. I know what to look for. I can see it as soon as it's happening ... I just know the signs without doing any observations on them. (SURGICAL 5/C/7&8)

Claire's skilful judgements involved intuitive understanding of elements of the patient's situation gained from past experiences of caring for similar patients,

> I have intuitive feelings about things they tell you about themselves. A lot of gynae patients have psychological problems. That sounds like a loaded label, but they present time and time again with pelvic pain and they have every investigation and there is nothing there. Quite often you get down to a psychological cause for it, and I can pick those up very quickly based on my experiences and knowledge. (SURGICAL 5/C/10)

These feelings were conveyed to other nurses during handover report to express concern about specific patients and their current status and situation,

> You do use those feelings because you sit in report and you say 'I've got a feeling about this gynae patient ...' from what you pick up from the pre-op. assessment. (SURGICAL 5/C/12)

Claire drew from a deep and up-to-date knowledge base in her field of nursing and she felt this provided her with a repertoire of skills to cope and manage in complex patient situations which were emotionally charged and often distressing for the nurses, patients and relatives:

> I'm Expert in the job that I'm doing in gynaecology because of my theoretical and clinical knowledge base and practical skills ... Most of the people who work here are fairly capable. I just have more skills in coping with what goes on when we have lots of dying patients, in particular. (SURGICAL 5/C/14)

Claire had a strong belief in the importance of keeping her knowledge current for practice and pursued a continual educational pathway to access relevant research and changing practices in her field:

> I would say that I never stop learning. [I am] always keeping updated through courses and reading ... I have completed teaching and assessing, family planning, two gynae courses, a six-month counselling course and hundreds of study days. (SURGICAL 5/C/13&14)

Claire demonstrated the knowledge, skills and expertise of an expert in the field of gynaecological nursing. She was flexible and comprehensive in patient assessment, drawing from a deep well of current and comprehensive theoretical and experiential knowledge to make clinical judgements of the patient's status. Her knowledge was often utilised intuitively, and these feelings, along with objective data, were conveyed to other members of the nursing staff to provide an understanding of the patient's situation. Claire's motivation and commitment to maintaining her in-depth knowledge base to underpin her practice meant that she was likely to continue functioning at this high level of expertise.

SUMMARY

In summary, these case studies offer the opportunity to consider the crucial nature of the knowledge base which underpinned the nurse's current levels of expertise. Nurses who were motivated and keen to learn exhibited growing knowledge bases at each level of expertise. It was also clear from these case studies that years of clinical exposure in practice were not synonymous with an advanced level of knowledge, especially when motivation and commitment to learning were absent. It was apparent that when the latter factors were not present, the nurse's desire to access formal and informal educational pathways to learn was also lacking. Furthermore, active reflection on the teaching of others and experiences from their own and others, practice appeared non-existent when motivation and commitment were not amongst the characteristics of the nurses. It is therefore clear that motivation to learn and commitment to practice are crucial for the nurses knowledge development to take place. Nurses who had reached or were likely to reach an expert level demonstrated a dynamic and changing depth of knowledge in the field of practice. Their knowledge and understanding of the specific nursing field reflected a continual synthesis of formal and informal theory, learning from others and from the nurses' own experiences in clinical practice.

CHAPTER TWELVE:
DISCUSSION OF FINDINGS

INTRODUCTION

This study has generated some valuable insights into the complex phenomenon of nursing expertise. The findings presented in Chapters 6, 7, 8, 10 and 11 clearly illuminate a number of factors which facilitate the development of such expertise. These factors include having strong motivation to achieve an advanced level of skilled practice and the existence of high-quality role models. The possession of a comprehensive theoretical knowledge base, in particular in the bio-physical and psycho-social sciences related to nursing practice, is also essential. Further, a reflective approach in which theoretical knowledge is synthesised with learning gained from experience in patient care is an important factor. The fact that length of time in practice does not appear to correlate directly with the development of expertise is a particularly interesting finding. These factors will be discussed below in relation to the literature which has informed current understanding of the development of expertise.

The findings of this study identify intuitive and analytical processes as key components of clinical judgement. They also expose the interrelationship between knowledge, reflection, intuition and analytical processes in nursing practice. The correlation between skills in clinical judgement and decision-making and levels of expertise is confirmed. The data also supports the view that it is possible to discriminate between levels of expertise at advanced beginner, competent, proficient and expert levels of practice. The phenomenon of 'getting stuck' at the competent level is also highlighted, along with recognition of the outstanding abilities found in the judgement and skills of expert nurses. These issues are discussed in relation to other major studies, and potential areas for future research are highlighted throughout the chapter. Finally, critical questions related to support and evaluation of the development of expert nursing practice are considered in light of these findings.

FACTORS INFLUENCING THE DEVELOPMENT OF EXPERTISE

Some of the major factors which appear to influence the development of nurses' expertise are discussed in this section. Motivation, theoretical and experiential knowledge, the synthesis of these forms of knowledge through

reflection and learning from role models in practice are each discussed in turn. It is important to note that while these factors are distinctive they remain inter-related within the nurses' practice. The interconnectedness of these factors reinforces their mutual importance to the development of expert nursing judgement and practice.

MOTIVATION AND COMMITMENT TO NURSING PRACTICE

Motivation and commitment to the provision of caring and effective nursing practice emerged as important ingredients in the progression through the four levels of expertise. Motivated nurses were propelled into learning from situations by a powerful wish to be more skilful and effective in their clinical fields. This desire to learn and improve practical skills and knowledge appeared to underpin progression across each of the indicators of expertise presented in Chapters 7 and 8. These very personal characteristics were clearly noticeable in some of the nurses at advanced beginner, competent, proficient and expert levels of practice in this study.

The significance of a person's motivation to learn and strengthen knowledge for practice is recognised in the literature. Waddell (1992) concludes from a meta-analysis of the effects of continuing education that characteristics of the learner - in particular, motivation - have a significant impact on learning and resultant change in nurses' practice. Motivation and committed interest appears to evoke 'passionate participation' in the act of deepening personal knowledge (Polanyi 1958; Carper 1978). The desire to grow in personal knowledge requires nurses to reflect on encounters with others and to explore their own feelings in relation to their prior knowledge (Polanyi 1958; Schultz and Meleis 1988; Moch 1990; White 1995).

Active endeavour appears essential for nurses to experience a new level of illumination and understanding in practice. Silva *et al.* (1995) describe a convergence between ways-of-being and ways-of-knowing for nurses in practice. This fusing of knowledge with relationships between self and others appears particularly important. Nurses who are highly motivated seek authentic engagement between themselves and others in their practice. Benner *et al.* (1996) describe the importance of engagement in nurse/patient relationships at the advanced levels of practice. However, they make no reference to the impact of motivation on nurses' development of knowledge and ability to engage meaningfully in such relationships.

By contrast, McMurray (1992) notes that highly motivated nurses are more likely to strive for higher levels of learning, aspire to reach an expert level and to be responsive to others demonstrating expertise. Further, expert Australian community nurses in McMurray's study, like the expert British hospital nurses in this study, demonstrate a career-long pursuit of knowledge through a variety of strategies. Conversely, the findings of this study and McMurray's research also show that some individuals are much more highly motivated than others to advance their practice.

This study highlights the desire found in motivated nurses to seek a greater understanding to inform and advance their practice. This characteristic was common to nurses at the highest levels, who constantly sought to deepen their knowledge and understanding of practice. It would appear important, therefore, that nurses who are motivated and aspire to greater development of expertise should be encouraged and supported in the clinical and educational settings. However, motivation alone is not sufficient to propel a nurse through the developmental stages to reach expert status in practice. Other factors are equally important, and each of these will be discussed in turn.

THE NEED FOR A COMPREHENSIVE THEORETICAL KNOWLEDGE BASE

The need for a sound, empirically-derived nursing knowledge base which includes the bio-physical sciences has long been recognised (Trnobranski,1993; Ferguson 1994). As a result there is an implicit expectation among educators that practitioners will, at least in part, base their decisions on synthesised knowledge from the bio-physical sciences and other underlying disciplines (MacFarlane 1977; Jacobs-Kramer and Chinn 1988). The findings of this study support this belief, and clearly demonstrate the importance of empirically-derived knowledge as a foundation stone within the development of clinical nursing expertise.

Advanced beginner, competent, proficient and expert nurses, as described in Chapter 8, recognised the importance of current and comprehensive, empirically-derived knowledge as an essential ingredient in the maintenance of skilful practice. Knowledge gained from the bio-physical sciences, especially of anatomy, physiology, patho-physiology and pharmacology provided the nurses with a more comprehensive understanding of the patients' likely progress in their illness or recovery. Theory derived from the psycho-

social sciences, such as communication, counselling and cultural issues, also emerged as key components of developing nursing expertise. A variety of formal and informal educational sources were utilised to gain these forms of knowledge. In particular, post-basic education programmes which have a substantial input from the bio-physical sciences were clearly identified in the advancement of nurses' expertise.

By contrast, data in this study demonstrate that nurses who learn by trial and error, or 'sitting by Nellie,' without acquiring an in-depth understanding of empirical knowledge pertaining to their field did not achieve expert level of practice. Dreyfus and Dreyfus (1996) support these findings and maintain that nurses must acquire and use identifiable scientific knowledge in their practice. Thus it appears that movement beyond the competent level requires nurses to have the ability to analyse and synthesise experiential and theoretical knowledge within their clinical practice.

The role of bio-physical sciences in the development of nursing expertise has been largely neglected until recently (Akinsanya 1987). Studies have shown that students rank the theoretical understanding of applied anatomy and physiology as very important to their preparation for qualified nursing practice (Leonard and Jowett 1990; Courtenay 1991; Macleod Clark *et al.* 1994; Alderton *et al.* 1995). Yet Benner *et al.* (1996) argue that nurses draw basic knowledge from the humanities and sciences, and then learn directly through emotional responses to clinical experiences in practice.

Luker and Kenrick (1992) offer an interesting explanation as to why nurses in their study, like those interviewed by Benner *et al.*, perceived their decisions and actions to be based purely on previous experience. They argue that theoretical knowledge becomes reclassified, merging with experiential learning to be recognised by nurses as 'experience'. This explanation fits with the findings of this study, which confirm that these forms of knowledge do merge in nurses' thinking and the newly formed synthesis guides their decisions in practice.

The findings of this study show an important link between knowledge of the bio-physical and psycho-social aspects of patient care, gained pre-dominantly through post-basic nursing courses, and the development of expertise. Courses which aim to develop nurses' knowledge further within their field of

practice are unlikely to succeed unless they incorporate appropriate theoretical knowledge. Further research is needed to identify effective ways of incorporating the teaching of applied bio-physical sciences within pre- and post-registration courses.

THE NEED FOR EXPERIENTIAL KNOWLEDGE

The data from this study demonstrate that the development of expertise occurs at least in part through knowledge gained from experiential learning in practice. In particular, the nature and regularity of the nurses' clinical exposure to patients with similar problems, concerns or situations appear to be important to their learning process. Many interpretive studies proclaim the importance of knowledge gained from experience to the practice of skilled nurses (Benner 1984; Schraeder and Fischer 1986; Gordon 1986; Agan 1987; Gerrity 1987; Benner and Tanner 1987; Rew and Barrow 1987; Carroll 1988; Rew 1988; Cahill 1991; McMurray 1992; McCormack 1993; Benner *et al.* 1996). Studies of cognitive decision-making have also recognised experiential knowledge as an important factor in expert judgement (Gordon 1980; Baumann and Bourbannais 1982; del Bueno 1983, 1989; Holden and Klingner 1988; Jones 1991).

However, the relationship between length of time spent in practice and the development of expertise remains poorly understood. A significant finding of this study relates to this issue. The absence of a clear relationship between the number of years spent in practice and the levels of nurses' expertise is highlighted in the postscript to Chapters 6-9 inclusive. In essence these findings showed that experience gained over time was not sufficient to propel nurses beyond the competent level of clinical expertise. This supports the findings of a recent survey by Polge (1995) which examined nurses' levels of proficiency and years spent in practice but conflicts with Benner's suggestion that a strong relationship exists between an increasing number of years in practice and increasing levels of nurses' expertise (Benner 1984; Benner *et al.* 1996).

Recognition of the limited impact that length of time in clinical practice can have on the development of a nurse's expertise has important implications for practice and research. Experiential knowledge appears to be gained when nurses have the ability to reflect, analyse and then synthesise previous knowledge with what has been learnt from experiences of patient care.

Further research is needed to explore the factors which enhance or inhibit nurses' learning from experiences in clinical practice. The importance of nurses' ability to reflect effectively on practice to build knowledge is elaborated upon in the following section.

THE IMPORTANCE OF REFLECTION IN THE SYNTHESIS OF THEORETICAL AND EXPERIENTIAL KNOWLEDGE

Data from this study illustrate how the nurses' development of expertise depended upon the effective and continuous blending of empirically-derived knowledge with experiential understanding through reflection on clinical practice. Nurses from advanced beginner level onwards were aware of the importance of both education and experience in the development of their knowledge for practice. These findings were supported by an earlier study in which newly qualified nurses found experience improved their skills and education elevated their levels of performance (McCloskey and McCain 1988).

Experience is described by Benner (1984) as the fine-tuning of theory through contending with many real clinical situations that add shades of differences to the theory. However, what is absent from Benner's description is a clear explanation of how this refinement of knowledge occurs. By contrast, Fish *et al.* (1991) describe 'strands of reflection' that incorporate the process through which synthesis of theoretical and experiential knowledge can occur during and after patient care. Twinn (1996) describes the process of reflective practice as essential to the practitioner's development of effective strategies to manage practice phenomena. Further, she concurs that the synthesis of understanding, demonstrated in clinical judgements, is evidence of what Schön (1983) refers to as intuitive knowing-in-practice.

Twinn's call for recognition of the genuine importance of reflection in the development of practice is supported by the findings of this study. It is also clear from the findings that some nurses at the competent level do not reflect effectively. Without this important ability, nurses are unlikely to develop to an expert level of practice. Reflective thinking emerged as an integral component in the refinement of knowledge and therefore crucial to the development of expertise.

This research demonstrates the advanced nurses' awareness of the need for active reflection on their bio-physical and psycho-social knowledge and aspects of patient care situations. Intuitive feelings, emotions, observations, judgement, actions taken and likely outcomes for the patients were considered in light of their understanding of previous similar situations. Cases which were reflected upon and remembered altered the nurses' knowledge and understanding of new patient situations.

These findings are strongly supported by other studies which point to a relationship between an empirical base and other forms of knowing gained from experience in nursing practice (Carper 1978; Jacobs-Kramer and Chinn 1988; White 1995; Silva *et al.* 1995). As Silva *et al.* (1995) suggest, ontological and epistemological elements appear to merge as advanced nurses find meaning in their relationships with others, knowledge and perceptions of shared experiences in specific situations. Factors such as openness, highly developed receptive, perceptual and attentive abilities and the ability to reflect and synthesise new knowledge, are also illustrated in other studies of expert nurses (Cahill 1991; McMurray 1992).

Reflection thus appears to be essential for nurses to assimilate theoretical knowledge of health and illness, aesthetic awareness and personal comprehension of the uniqueness of each patient's experience, and develop the capacity to make ethical decisions within complex patient situations (Carper 1978). Further research is needed to examine the ways in which nurses develop knowledge through group and self-reflection on shared and individual practice.

THE IMPORTANCE OF ROLE MODELS: LEARNING FROM OTHERS

The opportunity to learn from more experienced and knowledgeable nurses was clearly important to nurses at every level of expertise in this study. The findings, in particular those presented in Chapter 7, show that these nurses learnt through observation, joint participation and discussion with others during practice. These discussions often carried fragments of important, context-bound knowledge which were remembered by the learners and recalled in later practice. The behaviours, actions and attitudes of nurse role models affected the knowledge development of nurses new to the field. Moreover, the depth of knowledge and range of skills of the role models directly influenced the level of understanding achieved by the learning nurses.

Positive role models who stood out were reflective practitioners who shared their theoretical knowledge and clinical understanding with learners in the study. They helped 'new' nurses to discern the salient issues within specific patient situations. Positive interactions between learners and role models have been previously identified as providing direction for learning, growth in personal knowledge and, as a result, potential improvement in the nurses' practice (Carper 1978; Fish and Purr 1991).

Studies of the relationship between nursing students and qualified practitioners offer useful insights into the ongoing influence of nurse role models. These studies show students are impressed by nurses who are well organised, well informed, highly facilitative in maximising learning opportunities, and open to learning and adapting new knowledge into their own practice (Davies 1993; Campbell *et al.* 1994; Fitzpatrick *et al.* 1996). Melia (1987) also found that students remember and mimic the behaviours and actions of nurses who impress them. These findings are remarkably consistent with the relationships between the role models and the participant nurses who gained skills and knowledge as a result of their direction in this study.

In this study, advanced beginner nurses were focused on developing technical skills and were strongly influenced by nurses who were approachable and adept in the practicalities of care. Other studies have shown that newly qualified nurses tend to learn more about practical rather than theoretical aspects of nursing from early role models (Green 1988; Davies 1993). Interestingly, the influence of nurse role models appeared to alter as learners moved beyond the beginner stage and began to discern the difference between good and bad practice in others.

Nurses from advanced beginner level onward recalled learning from role models who were able to draw from a comprehensive knowledge base and in-depth clinical understanding of practice. Their actions were observed, copied and shaped the practice of the current experts. Interestingly, these nurses also clearly recalled a reduction in their learning opportunities when mentors were very inexperienced or absent. The findings of Fish and Purr's (1991) study also demonstrate how learning opportunities evaporate when mentors have little experience, a limited theoretical base and/or little understanding of ways in which learning can be fostered in nurses' practice.

The importance of effective coaching to assist nurses to learn through their experiences in practice is strongly supported in the literature. Twinn (1992) notes that the learner's integration of theory and practice is affected by the clinical supervisor's interpretation of professional practice. Some practitioners, acting in a supervisory role, may see practice merely as a narrow range of practical tasks. Schön (1987) claims this mechanistic, rule-bound approach is ineffective in preparing learners for handling new and confusing clinical situations. Alternatively, other clinicians have a much broader appreciation of the intuitive, emotional and interpersonal aspects of professional practice. Data from this study demonstrates that autocratic clinicians who focused on adherence to standardised guidelines and taught set procedures of care in a pedagogical style did *not* emerge as effective teachers in practice.

Other studies also highlight the importance of effective guidance for learners by knowledgeable and highly skilled nurses in acute adult, psychiatric, and community settings (McMurray 1992; Benner *et al.* 1996). Thus the influence of other nurses emerged as a further important factor in the development of clinical expertise. Without expert role models, the development of nurses' assessment, judgement and management skills in patient care may be severely limited. Further research is needed to explore the impact of nurse role models on the development of qualified nurses knowledge in clinical practice.

CLINICAL JUDGEMENT REVISITED

The findings of this study support the argument that a nurse's ability to make fast and accurate clinical judgements in complex patient situations goes hand in hand with her level of expertise. A nurse's capacity to synthesise and develop knowledge through reflection during and after practice provides the underpinning of the development of this form of skilled judgement. Intuitive awareness of change and the ability to respond with an analytical search and interpretation of clinical cues to complete the judgement is dependent on each nurse's level of knowledge. These components are discussed below, followed by a critique of the current understanding of clinical judgement, which is based on models from interpretive studies and cognitive frameworks.

THE ESSENTIAL UNDERPINNINGS OF KNOWLEDGE, REFLECTION AND INTUITIVE RECOGNITION IN CLINICAL JUDGEMENT

As described in Chapter 10, the factors which underpinned the nurses' development of expertise also underpinned their ability to make clinical judgements in practice. Synthesis of experiential and theoretical knowledge through reflection provided the basis of the skilled and intuitive clinical judgement found in expert practice. By contrast, nurses new to a field who have little experiential knowledge relied on factual, context-free knowledge to make simple judgements in practice. Nurses' increasing ability to make skilful judgements mirrored an increasing depth of experiential and factual knowledge of the field of patient care.

The nurses' clinical judgements were informed by the merging of experiential insights with theoretical knowledge through reflection on practice. Reflection made it possible for these nurses' to recall patient care episodes, complete with memories of changing clinical cues, feelings experienced, judgements made, actions taken, and actual outcomes in terms of recovery or deterioration to inform current practice. These elements were also demonstrated in other studies of skilled nurses decision-making in patient care (Schraeder and Fischer 1987; Rew 1989, 1990; Smith 1988; Logan and Boss 1993; Orme and Maggs 1993; McCormack 1993; Polge 1995).

Intuitive recognition of clinical changes in their patients was closely linked to the nurses' growing knowledge of their field of practice. The expert nurses' did not recall the influence of this knowledge on their intuitive awareness and yet it became evident when articulating the thoughts behind their decision-making. Other studies also note how nurses intuitive feelings related to direct patient contact, experience and self-awareness in practice (Schraeder and Fischer 1987; Young 1987; Agan 1987; Smith 1988; Rew 1989, 1990; Miller 1995). The connection between the nurses' growing experiential and theoretical knowledge, synthesised through reflection, and intuitive recognition of clinical change in patients is a significant one. Further research is needed to explain how knowledge and intuition are related within nurses' judgement in practice.

THE RELATIONSHIP BETWEEN INTUITION AND ANALYTICAL THOUGHT IN CLINICAL JUDGEMENT

Chapter 10 presents clear qualitative evidence of a deepening relationship between knowledge, intuitive and analytical processes in nurses' clinical judgements across the levels of expertise. Intuition acted as a stimulant for analytical problem-solving within the nurses' clinical judgements. Their intuitive feelings triggered emotional, and physiological sensations which related to their concern about the patients' status. Similar responses are documented in previous studies of nurses' experiences of intuitive feelings during patient care (Rew 1988; Rew and Barrow 1989).

Intuitive awareness prompted the nurses to search for the cause of their concern through an analytical process of examination and consideration of relevant clinical cues. They gained confidence in the intuitive elements of their judgement through validation by objective data and reflection on patient outcomes. This phenomena is supported by evidence from other studies of nurses' decision-making (Young 1987; Rew and Barrow 1989; Burnard 1989). As the nurses' knowledge deepened, identifying the salient clinical signs became easier, quicker and more accurate. The time between intuitive recognition and confirmation in concrete clinical data of patient change appeared to become shorter as the nurses' knowledge and expertise increased. These processes were fused in the experts, who had the ability to recognise change intuitively and rapidly to identify the relevant clinical cues, actions needed and likely patient outcomes.

Intuition within the clinical judgement of the nurses in this study emerged as a sudden awareness, expressed as a feeling, which involved unconscious recognition of a changing clinical state in the patient. This feeling evoked a change in emotion, behaviour or physiological response in each nurse, and acted as a trigger for an analytical search for data to confirm a change in the patient's status. The effectiveness of this process was dependent upon the nurse's knowledge and experience, and thus provoked a different response depending on the level of the nurse's clinical expertise.

It was the depth of the knowledge base of the expert practitioner which made her use of intuition in judgement so skilful. The difference between expert and non-expert appeared to lie not in the presence of intuition, but rather in the expert's ability to use it more skilfully and effectively through the rapid

recognition of the relevance of the patient's clinical signs, actions and outcomes. As such, the relationship between intuitive and analytical elements of nurses' judgement should be recognised and harnessed for effective use in practice. Further research is clearly required to investigate this phenomenon in greater depth across the four levels of nursing expertise.

CRITIQUE OF THE COGNITIVE MODELS OF CLINICAL JUDGEMENT

As noted in the previous section, the findings presented in chapter 10 clearly identify the important relationship between deepening knowledge, intuition and analytical thought in nurses' clinical judgement across the continuum of clinical expertise. These elements are seen as integral when consideration is made of any model of clinical judgement or decision-making applied to nurses practice. It is apparent from the review of the literature presented in Chapter 2 that studies which focus on the analytical processes of decision-making often identified other influences on the nurses' clinical judgements.

Studies based on cognitive models of reasoning seek to track skilled nurses' use of analytical process in decision-making. However, instead of finding only this linear mode of thinking, these researchers found that nurses drew on knowledge, experience and intuition as well (Gordon 1980; Baumann and Bourbannais 1982; del Bueno 1983, 1989; Holden and Klingner 1988; Jones 1991). These studies, constrained by linear frameworks, also failed adequately to discriminate between the clinical reasoning of novices and experts (Elstein *et al.* 1978; Tanner *et al.* 1987; Itano 1989).

It is worth noting that more recent cognitive models have been formulated in recognition of the experts' use of processes which transform the patient problem into a 'pattern' which is recognised through extensive knowledge (Rivett and Higgs 1995; Rolfe 1997). These models accept the premise that experts bypass the linear thought processes used by the novice (Hampton 1994), except in unclear and unfamiliar patient cases (Boshuizen and Schmidt 1995). However, such models still appear limited in their conceptualisation of the dynamic relationship between knowledge, intuitive and analytical processes in nurses clinical judgement as their level of clinical expertise increases.

The findings of this study support evidence found in interpretive studies, reviewed in Chapters 3 and 4, of involvement of experiential knowledge,

intuition and factual knowledge within expert nurses' decision-making (Pyles and Stern 1983; Benner 1984; Schraeder and Fischer 1986; Benner and Tanner 1987; Rew 1988, 1989, 1990; Benner *et al.* 1996). Another small but significant study also demonstrated that elements of both intuitive and analytical models of thinking were used by expert nurses during patient care (Etheredge 1989).

The presence of intuitive elements in the clinical judgement of nurses from the advanced beginner to expert level emerged in the findings of this study. These findings are supported by interpretive studies, considered in Chapter 4, which have noted intuitive processes at work in the judgement processes of a range of nurses from student to expert level of practice (Schraeder and Fischer 1987; Smith 1988; Rew 1990; Logan and Boss 1993; Orme and Maggs 1993; McCormack 1993). However, these studies looked only at a specific level of nurse and did not examine the use of intuition in the clinical judgement of nurses across the continuum of expertise. Only Polge's (1995) study set out to examine nurses' decision-making across identified levels of practice. Significantly, this study also identified intuitive and analytical processes in nurses at all levels of expertise. By contrast, Benner *et al.* (1996) conclude that nurses, from advanced beginner to proficient level, use only analytical processes, and that intuitive judgement is found only in conjunction with linear thinking by expert nurses.

The assumption which underpins some cognitive theories (Newell and Simon 1972), that clinical judgement is a purely rational calculation in which measurable signs are processed in relation to factual knowledge, irrespective of an individual's level of expertise, is not supported by the findings of this study. Rather, the findings presented in this thesis are consistent with those of the interpretive studies, reviewed in Chapters 3 and 4, which have identified that nurses use analytical processes as well as experiencing intuitive feelings during decision-making in practice. These findings are of particular interest, as the cognitive view of decision-making has caused some health professionals to devalue the intuitive element of their own and others judgement. The impact of this view has driven nurses in this and other studies to use intuition covertly during decision-making in practice (Pyles and Stern 1983; Gordon 1986; Benner and Tanner 1987).

A clear and deepening relationship was demonstrated between intuitive and analytical processes in nurses' clinical judgements across the levels of expertise in this study. However, these findings do not completely support the premise of Benner *et al.*'s (1996) model, which holds that these two judgement processes do not become interwoven until the expert level of practice. This important issue will be discussed separately later in the discussion section. Further research is clearly needed to consolidate the understanding of the changing relationship between intuitive and analytical thinking in the clinical judgements of nurses across all levels of expertise.

EXPERTISE REVISITED

A number of issues emerge from the findings in Chapters 6, 7, 8 and 9 in relation to distinguishable levels in a continuum of nursing expertise. The first concerns the robustness of the levels of expertise identified through the data and the remarkable consistency between them and the nurses' own judgements of their expertise. The second involves the validity of current theories and models of expertise. A case is made for a revised model based on major differences found between the findings of this study and the frameworks proposed in cognitive and interpretive models of expertise.

ROBUSTNESS OF THE LEVELS OF EXPERTISE

A striking consistency between the professional judgement of the ward sisters/charge nurses, researcher, participants and the inductively-derived level of each nurse's expertise is found in the data presented in the postscript which follows Chapter 9. This consensus of opinion offers strong support for the credibility and robust nature of the indicators to identify the nurses' levels of expertise.

The ward sisters/charge nurses who participated in this study were active members of the nursing team and well acquainted with the skills, knowledge and expertise of their staff. The close professional association between ward sisters and nurses, through participation in and discussion of patient care, appeared to provide an accurate understanding of the nurses' knowledge, skill and expertise. These findings contradict those of Rubin's (1996) study as she found that head nurses identified nurses as expert when criteria drawn from Benner's research rated them as non-expert.

A valuable extension to this research would involve investigation of the basis of ward sisters/charge nurses' judgement of the levels of nurses' expertise working within their wards or units. Also, further exploration of the basis of each nurse's self-assessment may shed light on nurses' understanding of the development of clinical expertise.

MODELS OF EXPERTISE REVISITED

Several important issues are considered in relation to current theories and models of expertise in this section. The involvement of intuitive elements of judgement at each level of nurses' practice and the absence of a clear relationship between time spent in practice and level of expertise are two crucial issues which are given particularly close attention. Other fundamental differences found between the findings of this study and current cognitive and interpretive models of expertise are discussed. A review of Benner's (1984) novice category is also included. The tendency for some nurses to reach a standstill at the competent level while others progress to become experts are further important matters which are considered.

THE ROLE OF INTUITION IN NURSES' JUDGEMENT AT EACH LEVEL OF EXPERTISE

Emergent in the findings presented in Chapter 10 was the way in which nurses continued publicly to display the use of linear problem-solving during decision-making at each level of expertise in practice. Meanwhile, as they developed across this continuum, the nurses' covert understanding and use of intuitive elements in their decision-making changed. Advanced beginner nurses did initially follow the analytical process of problem-solving described in cognitive models of clinical reasoning. Other studies have also demonstrated beginners use hypothethico-deductive reasoning processes (Boshuizen and Schmidt 1995; Rivett and Higgs,1995). However, advanced beginner nurses in this study had already begun anxiously to perceive intuitive feelings in decision-making during practice. An increasing awareness of the integral nature of intuitive recognition and its usefulness as a trigger for action accompanied the nurses' increasing expertise in this study.

The important role of intuition identified in this study suggests that this component should be included in any model which seeks to depict the true nature of nurses' decision-making as they develop clinical expertise. To a great extent cognitive models ignore the question of intuition in judgement.

Instead, they assume expert practice can be replicated by inputting extensive domain-specific knowledge into the computer data base of an artificial intelligence programme. Theories of expertise based on cognitive reasoning, which include concept mapping and preconscious pattern recognition, do not fully explain the rapid intuitive judgement found in expert practitioners (Ericsson and Smith 1991).

Nor does the 'fuzzy logic,' which figures in the latest cognitive theories, explicitly identify how it is possible to move from learning by experience to the rapid intuitive judgement found in the most skilled practitioners (Garnham and Oakhill 1991; Rolfe 1997). Supporters of the linear thinking advocated by cognitive scientists argue that intuitive feelings are subjective and thus have limited applicability in a profession which is attempting to develop a research base to support its actions (English 1993). This steadfast denial of the legitimate role of intuition in nurses' decision-making appears to be based on a poor understanding of the amount of empirical research which has been conducted in this field. Further research could continue this investigation into how the nature of clinical judgement changes as nurses gain greater expertise.

THE 'FUZZY LOGIC' OF EXPERT THINKING OFFERED BY COGNITIVE MODELS OF EXPERTISE

Cognitive models reflect what is measurable and quantifiable in nurses' work and not the movement, development and artistry of clinical expertise. The characteristics of the levels of expertise which emerged in this study present interesting differences from the theories of expertise which have been steadily developing over the last twenty-five years in cognitive science.

Evidence of serious dissatisfaction with previous theoretical understanding of expert performance and a disconcerting lack of constancy in the characteristics of expertise has been gathered in studies based on old cognitive theories (Holyoak 1991). Recent work on the use of heuristic methods and modes of artificial intelligence has evolved into a second generation of cognitive models which include knowledge compilation, chunking theories and 'fuzzy logic' (Thompson *et al.* 1990; Garnham and Oakhill 1994). Major issues of concern that have been highlighted in the literature reviewed in Chapter 2 are considered here and compared with the findings of this study.

One of the underlying assumptions of cognitive theories is that repeated performance will improve an individual's practice. Yet the cognitive studies of decision-making and expertise reviewed in Chapter 2 did not offer convincing evidence to support this assumption. Notions that experience and practice are essential to improvement in practice are unsupported in studies where great differences in expertise have been found amongst people with equivalent amounts of experience and practice (Holyoak,1991).

This concern in relation to what has been a fundamental aspect of cognitive theory is underlined by the case studies of nurses at different levels of expertise presented in Chapter 11. Indeed, practice alone did not appear to inform the nurses' knowledge for future judgement in new patient situations. Instead, intuitive recognition combined with the ability to gather and synthesise knowledge through active reflection on practice emerged as essential to nurses' development of expert practice.

Many of the cognitive studies reviewed in Chapter 2 sought to prove that experts use a single analytical search strategy. This assumption appeared to be unsubstantiated in the face of the evidence of the intrinsic role of intuition repeatedly noted in studies of experts decision-making. A further central tenet of second-generation cognitive science theories has been that high levels of performance reflect specialised domain knowledge that, by its very nature, is of little or no use in performing tasks in other domains (Holyoak 1991). The findings described in Chapters 6 to 9 demonstrate that nurses' expertise emerged as the product of several forms of knowledge as well as increasing theoretical domain-specific knowledge.

As shown in Chapter 2, the teaching of expert 'rules' to students through automated tutoring systems has also been found to be inadequate in the development of expert performance. The findings in this study suggest that learning from experts in practice is important, but not in the form of a set of fuzzy rules. Information is passed on by experts in the form of small segments of knowledge, which is often context bound to patient care episodes. This information is remembered by the learners, along with the details of actions taken and actual patient outcomes. In the attempt to duplicate expert practice, cognitive scientists have programmed imperfect rules into computers which allow them to learn by experience. The view that expertise can be represented in this way suggests that knowing these rules will make it possible to predict

expert performance. This view is challenged by the findings of this study, as much of the nurses' knowledge emerged through intuitive recognition and not through conscious awareness of fuzzy rules of problem-solving in practice.

The early cognitive views based on measurable aspects of the experts' knowledge have broadened, and recent studies recognise such qualitative characteristics as seeing and representing a problem qualitatively, highly developed levels of pattern recognition, self-awareness and the ability to include the patient's perspective in their understanding of a clinical problem (Jasper 1994; Hampton 1994; Higgs and Jones 1995). However, these characteristics still fail to recognise the rapid intuitive recognition found in the experts' judgement within this study.

THE ROLE OF INTUITION IN BENNER *ET AL.*'S (1996) MODEL OF EXPERTISE

The findings of this study support the literature reviewed in Chapters 3 and 4, which confirms nurses' use of intuition in decision-making during practice. Yet Benner, unlike authors of cognitive models of decision-making, incorporates intuitive thinking within both the early and more recent versions of her model of expert practice. It is not surprising that supporters of the traditional methods of positivist research debate the robustness of Benner *et al.*'s model on the basis of methodology. Critics hold that Benner *et al.* use a highly selective 'paradigm case' method, which could involve 'rose-coloured' recollection of incidents from practice. Further that inferences are drawn from the data by these researchers which are subjective, impose meanings that do not exist and have not been validated (McCaugherty 1993; English 1993).

These methodological criticisms appear to be based on the post-positivists view of validity and reliability, which are not seen as appropriate criteria for establishing the trustworthiness of qualitative research (Lincoln and Guba 1985). Interpretive researchers in turn criticise these writers for using traditional principles of establishing rigour instead of the accepted techniques of the interpretive paradigm (Darbyshire 1994).

Supporters of theories from cognitive science endeavour to explain intuition in terms of 'post-cognitive evaluation' and 'crisis anticipation' from a model of cognitive psychology (English 1993). This desire to objectify and measure the intuitive qualities of the expert has been heavily criticised by qualitative

researchers (Darbyshire 1994). Critics of Benner's interpretive model also seek stages of acquisition which are measurable, rather than merging points on a continuum, and a definition rather than description of aspects of expertise (English 1993).

Benner *et al.*'s model has also received criticism relating to the exclusivity of intuitive understanding within expert performance (English 1993) and the potential inaccuracies of attempted intuitive judgements by non-experts (Cash 1995). These issues are important, for the findings of this study, as previously stated, provide a different view of the development of intuition in judgement of nurses across the levels of expertise from those described by Benner *et al.* (1996). These differences are explored and compared later in the discussion.

THE NOVICE LEVEL IN BENNER'S (1984) MODEL OF EXPERTISE: AN OBSOLETE CONCEPT?

A further important issue surrounds the number of stages in the continuum of nursing expertise. The emergence of clearly distinguishable levels across the continuum of expertise has important ramifications for nursing practice and education. Reconstruction of the data presented in the Indicator Postscript revealed four levels of expertise amongst the nurses namely, advanced beginner, competent, proficient and expert. The emergence of four levels proved interesting, as Benner (1984) original model of expertise included five stages commencing with a 'novice' group.

The characteristics of nurses depicted at the novice level in Benner's model were not found in the nurses of this study. Further research which has investigated nurses' learning patterns and decision-making in practice offer support for the existence of a four-level continuum of expertise (Logan and Boss 1993; Polge 1995). Interestingly, Benner *et al.*'s (1996) more recent work supports four levels of nurses' expertise. The agreement found within these studies is encouraging, and suggests there is a growing consensus in relation to the potential progression of nurses across four levels of expertise in clinical practice.

MAKING A CASE FOR A REVISED MODEL OF CLINICAL EXPERTISE

The major indicators which emerged through the findings of this study offer a framework with which to view the development of expertise in nursing

practice. When examined in combination, these indicators permitted the identification of four qualitatively and conceptually different levels in nurses' expertise. The differences between these levels, namely advanced beginner, competent, proficient and expert are described in detail in this section.

The concept of advanced beginner practice

A number of outstanding indicators of advanced beginner nurse practice emerged from this study. In particular, advanced beginner nurses maintained a strong focus on tasks while carefully following rigid pre-arranged guidelines of patient care. The beginners acted as learners who recognised the importance of deepening their knowledge through experience in post-operative patient care to advance their level of expertise. Simultaneously, the nurses' burgeoning technical and procedural teaching skills became apparent. As learners, the beginners also felt dependent on the directions of senior medical and nursing staff in relation to any major change in patient management.

The advanced beginner nurses in this study placed considerable importance on deepening and consolidating their empirically-derived knowledge, in particular that of bio-physical sciences. Furthermore their use of analytical thinking in simple problem-solving during patient care reflected an empirically driven approach to clinical reasoning. That is to say, advanced beginners had sufficient theoretical knowledge to identify and report abnormal clinical signs which lay outside of the parameters set by senior nursing or medical staff. However, juxtaposed with the use of 'scientific' knowledge was the nurses growing awareness of how intuitive feelings and emotional responses impacted on their clinical judgements during patient care.

Many of the beginners demonstrated a high level of motivation and commitment to development through learning in practice. Some displayed emergent skills of learning through reflection on theory and practice. The development of greater theoretical knowledge with which to underpin patient care also emerged as an important ingredient in the advancement of beginners practice. These influences emerged as far more powerful than time spent in the clinical field with advanced beginner nurses ranging in clinical experience from newly qualified to several years post-registration. Months or years of experience alone could not be used to identify this level of practice.

The concept of competent practice

The competent nurses demonstrated an increased level of clinical understanding and technical skill compared with beginner nurses in this study. Greater organisational ability gave them the opportunity to become more aware of the patient while focusing on meeting the plan of care. Additionally they had developed beyond complete dependence on fixed guidelines and directions of more senior nursing staff. The competent nurses could recognise more subtle and subjective clinical signs which informed their judgements in patient care, and were more aware of the effectiveness of others practice. As a result they demonstrated an increased flexibility, while continuing to carefully follow standard routines in patient care. However, it is important to note that nurses at this level were still learning from experience, education and from others how to recognise and interpret the significance of patients clinical signs and symptoms in particular situations.

Prediction of nurses functioning at the competent level of expertise according to years of experience was not supported by the findings of this study. Instead a picture emerged of great variation in years spent in practice by this level of nurse from just nine months post-registration to eighteen years. These nurses recognised the importance of the development of both theoretical and experiential knowledge to the advancement of their practice. It was the synthesis of theoretical knowledge gathered in tandem with experiential learning, rather than learning gained through time spent in clinical practice that was perceived to increase these nurses' clinical expertise.

Competent nurses in this study demonstrated the ability to analytically process and interpret more complex relationships between abnormal clinical signs and physiological changes in the patients' states. In addition these nurses described an increasing number of experiences in which intuitive recognition of relevant signs outside of familiar clinical patterns in patient situations had occurred. Competent nurses, unlike the beginners, had greater understanding and confidence in these feelings based on previous experiences and the outcomes of those patient care episodes.

Failing to progress beyond the competent level

Some useful insights have also been gained in regard to the question of why some competent nurses do not continue to progress to a more advanced level of practice. These nurses were not found to progress beyond the competent

level if their knowledge was based only on learning from experiences of patient care. They required teaching input from more skilled nurses in practice, opportunities for ongoing field-specific education, and the development of skills of reflection to synthesise and utilise their knowledge effectively in practice. A further essential element was the intellectual capacity which made it possible for the nurses to combine a variety of types of knowledge into a form which was easy to recall when it was needed during practice. There is evidence in this study that not all nurses develop the ability to learn effectively from reflection on practice.

The personal characteristics of motivation and commitment to practice were also important factors in development beyond the competent level. Nurses without motivation did not actively pursue learning opportunities in practice and the educational setting, and tended to be less involved in the teaching of others. These nurses also did not progress beyond this level if personal interests and career pathways drew their interest and motivation away from nursing. In these circumstances, nurses seemed comfortable working at the competent level, often on a part time basis. The work was seen as less demanding than the roles occupied by the proficient and expert nurses, and allowed the competent nurses time to pursue other interests.

Highly motivated competent nurses actively sought to learn from their own experiences, from others and from past-basic courses pertaining to their field of practice. They imitated the styles of admired role models and, in turn, taught other nurses during patient care. However, to do so these nurses needed time to spend on learning and teaching, reflecting and participating in courses, all of which were under the control of the ward manager. Managers of the clinical setting hold the responsibility for building and financing the infrastructure which maintains the skill-mix and educational opportunities for staff development. Nurses' motivation appeared to rapidly decrease when faced with a lack of managerial support to provide these resources and further development in practice appeared unlikely to occur.

The concept of proficient practice

Nurses at the proficient level were found to have an increased ability to comprehend patients' clinical status accurately. This was due to increased understanding and interpretation of the trends and patterns and their significance in the patients' situations. The nurses growing awareness of the

relevance and salience of clinical signs meant a faster, more confident and flexible response to early signs of change in the patients. However they still remained observant of the standard protocols for patient care. These nurses were also keen to confirm complex judgements and decision-making in unclear situations with those they considered to be the experts in the field. Yet, they were confident teachers, turning to experts rarely for information on recent changes in practice.

The synthesis of theoretical and experiential knowledge, merged through active reflection on events in care, appeared essential to the development of proficient nurses in this study. In keeping with these findings, learning by experience provided only part of the knowledge which was developed by these proficient nurses. Again time spent in clinical experience within a field provide little indication of the potential of a nurse to reach a proficient level of practice. For example, after four years spent in a specific clinical field, a nurse may have reached this level or be functioning at the competent level of expertise.

Empirically-derived knowledge, in combination with experiential knowledge gained from their own and through others experiences, underpinned these nurses' clinical judgements. This depth of knowledge gained through a motivated approach to career long learning, informed their perceptions, understanding and intuitive judgement of clinical cues and salient details of the patient's situation as a whole. These feelings were either strengthened or weakened over time, and were responsible for early planning before clear evidence of clinical deterioration in the patients was available.

Proficient nurses were also able to identify, analyse and make judgements about the relevance of specific signs and symptoms, perceive changes, choose the correct actions and were aware of the likely outcomes of the patient situations. The intuitive feelings and emotional responses of the nurses were thus entwined with their analytical thinking and guided their approaches to patient care. Their intuitive understanding appeared to be based on empirically-derived and experientially learnt knowledge, along with observed and related clinical information. This intuitive recognition appeared to inform the proficient nurses' analytical thinking and decision-making in patient care.

The concept of expert practice

Expert nurses in this study emerged as motivated, interested and committed to learning and practice. These personal attributes permeated every aspect of their professional lives. They had a deep and comprehensive grasp of bio-physical and psycho-social knowledge, blended with experiential knowledge enhanced by the experiences of caring for patients and working with and learning from other health professionals. These forms of knowledge were synthesised through active reflection on patient-care situations. As a result these nurses treated patients as individuals and related to their families and others in unique ways to provide holistic care.

Expert practitioners were flexible and responsive to signs recognised in their patients through their synthesised knowledge of theoretical and practical aspects of past patient-care episodes. Their interpretation of the signs directed the search for further salient information through pertinent questions and clinical observations to reach a holistic judgement of the patient's situation. Expert clinical judgement emerged as both analytical and intuitive in nature. Intuitive understanding was strengthened or weakened by the nurse's knowledge of the patient over time. These nurses used their extensive background knowledge to seek evidence of change in the patient's clinical status. When slight deviations from a 'normal' trajectory of recovery occurred the experts used an intuitive grasp to initiate reflection and analytical thinking to identify the area of concern and direct their response.

Findings from this study demonstrated that the experts' wisdom underpinned their ability to be skilful autonomous practitioners and deeply knowledgeable teachers in their realm of practice. Experts that these nurses had known in the past, who had shared their knowledge and ways of relating to patients and their families, figured prominently in the development of the current expert nurses. These experts were confident and intuitive decision-makers who exposed the depth of their knowledge through their descriptions of patient care during practice.

FOUR LEVELS OF EXPERTISE: DIFFERENCES BETWEEN THE REVISED MODEL AND THE BENNER *ET AL.* (1996) MODEL OF EXPERTISE

As stated above, the findings of this study identify a model which incorporates four qualitatively different levels in the nurses' expertise. The similarities

between characteristics of nurses at each of the four levels in the revised model of expertise and those described in Benner *et al*'s (1996) model are apparent. However there are also striking differences and these are discussed in detail in the following section.

The concept of advanced beginner practice

There are the number of quite major differences between the characteristics of an advanced beginner in this study and those described in the Benner *et al* (1996) model. The advanced beginner nurses in this study placed considerable importance on deepening their empirical knowledge, particularly aspects of bio-physical sciences such as physiology and pharmacology. This recognition of the importance of theoretical knowledge to practice development is not made obvious in the description of advanced beginners provided by Benner and her colleagues. Interestingly, in tandem with these nurses desire for greater scientific knowledge was a growing awareness of the place of intuitive feelings and emotional responses during simple decision-making in patient care. Benner *et al* refer to the intuitive elements in the advanced beginner nurses' clinical judgements as 'guesswork'.

A further major difference involves the length of time in which a nurse may remain at the advanced beginner level of expertise. Benner *et al* consistently describe beginners as newly qualified staff with less than one year of practice. In this study, advanced beginners varied between being newly qualified and several years post-registration. A further striking feature among many of the beginners of this study was a high level of motivation and commitment to learning in practice. Motivation is not mentioned among the personal attributes of the advanced beginner group in Benner *et al*'s research.

Some of the beginners in this study also demonstrated emerging skills of learning through reflection on theory and practice. The act of relating prior knowledge to current understanding of event in practice is described by Benner *et al,* but not as an active reflective process involving an experiential learning cycle. The implication of these differences is that theoretical knowledge emerges as far more important in the progression of the beginner to competent level of practice in the model which emerged from this study.

The concept of competent practice

Several major differences exist between the characteristics of the competent nurses identified by Benner *et al* and those which emerged from this study. Again, one of the most significant differences involves the prediction of nurses' levels of expertise according to years of experience. Benner *et al* believe that nurses typically function at the competent level after more than two and less than five years in practice. A very different picture emerged from this study, as demonstrated in Chapter 12 in which one competent nurse had been registered and working for only nine months while another had spent eighteen years in her field of practice.

Competent nurses in this study recognised the importance of development of both theoretical and experiential knowledge to inform their practice. The findings show that it is the synthesis of ongoing theoretical input, in tandem with experiential learning, that increases nurses' clinical expertise. By contrast, Benner *et al* claim that it is the competent nurse's learning through experience which provides recognition and skilful judgement in a particular clinical situation and progression to proficient and expert levels of practice. Benner and her colleagues recognition of the importance of a steady input of empirically-derived knowledge for the development of competent nurses is much less apparent than that found within this study.

Competent nurses in this study demonstrated analytical processes combined with some intuitive recognition of relevant signs outside of familiar clinical patterns in patient situations. Yet, Benner *et al* only describe the competent nurses' use of emotions and analytical thought in the formation of clinical judgements during practice. These researchers suggest that the nurses' emotions alert them to what is happening to the patient. However, in this study, nurses described experiencing intuitive feelings which preceded change and left lasting memories of the eventual outcomes of the patients' situations. These intuitive feelings did not appear merely to be the simple emotional responses that Benner and her colleagues describe in their work.

Benner *et al* also suggest that these nurses are able to contrast options in care with consequences to gather the 'big picture' in a particular patient situation. Yet at the same time, they offer a conflicting view by stating that competent nurses are skilled in planning and organising according to structured guidelines, which prevents them from noticing subtle changes in the patients'

clinical situations. The findings of this study support the view that competent nurses have an increasing awareness of the patient while focusing on meeting the organised plan of care. However a grasp of the 'big picture' was not found in the competent nurses' practice within this study.

Benner *et al.* describe a group of competent nurses who are unlikely to progress to the more advanced levels of nursing practice. These authors suggest that this group of nurses have a change in understanding and expectations of nursing practice and are disillusioned by organisations' inability to meet their needs. While this is likely to be the case for some, it does not take into account the group of nurses found in this study who have developed interests in activities outside of nursing. Benner *et al.* do not describe the latter group who take the opportunity to move into other careers and pursuits at this point in their clinical progression.

Price (1995), a critic of Benner's (1984) work also points out that Benner does not explain why expert practice cannot be achieved by all nurses. She ponders the impact of factors such as staffing levels and current socio-political restraints on the development of the expert nurse in practice. Price also raises the question of what should be done about nurses who are happy to reach only a certain degree of competency rather than strive for expert practice. These are sound and reasonable questions, which are partially answered in the findings of this study.

A final point on this issue surrounds the nurse's ability to engage in a genuine way with patients to reach the expert's level of understanding and practice. As described in Chapter 9, holistic care required nurses to be open to, and skilled in, identifying and meeting the non-physical as well as physical needs of the patient. Benner *et al* describe the progression of the competent nurse from task orientation to an advanced level of patient-centred care as a deliberate choice. These authors state that some nurses choose to become skilled in technical tasks rather than the relationship skills required to understand complex individual responses. Logan and Boss (1993) note that nurses must master technical skills before they can develop relationship skills within patient care situations. These findings offer interesting explanations as to why some competent nurses are only comfortable in handling the technical/physical needs of patients.

The concept of proficient practice

Empirically-derived knowledge, in combination with experience, underpinned these nurses' ability to make clinical judgements. They were able to identify the relevance of specific signs and symptoms, perceive changes, identify actions required and likely outcomes of patient situations in this study. By contrast, Benner *et al.* place great importance on the proficient nurses' learning by experience which, they argue, reshapes their perceptual and relational skills as guides for action. These researchers describe the proficient nurse as having a qualitatively different 'way of being' in the clinical situation. Benner *et al* recognise that proficient nurses need to have scientific knowledge, but give little recognition of its place in their development toward expert practice. The findings of this study suggest that learning by experience provides only part of the knowledge which is developed by the proficient nurse. The synthesis of theoretical and experiential knowledge, merged through active reflection on events in care, appears essential to the development of proficient nurses in this study.

Further differences are also found between the characteristics of proficient nurses in this study and those described in Benner *et al*'s research. In particular, there is a discrepancy in relation to years spent in practice and achievement of the proficient level of expertise. The findings of this study suggest that nurses with more than four years of clinical experience within a field may have reached the proficient level. However, they may just as easily be functioning at the competent level of expertise. By contrast Benner *et al* describe proficient nurses as having between two and five years of experience in similar situations, though they are not considered experts by their managers.

In this study, judgements made by proficient nurses were dependent upon prior knowledge, clinical cues and the nurses' perceptions of the details of the patient's situation as a whole. These nurses experienced intuitive feelings about patients before clear evidence of clinical deterioration was available. Their intuitive understanding appeared to be based on empirically-derived and experientially learnt knowledge, along with observed and related clinical information. This unconscious recognition directed their analytical thinking and informed their decision-making in patient care. By contrast, Benner *et al* describe the nature of proficient nurses' clinical reasoning as based on past experience and involving 'emotional attunement' to understand concerns rather than intuitive feelings about the patients' situation.

The concept of expert practice

Benner *et al* conclude that expert judgement is characterised by increased intuitive recognition of salient issues in a patient's situation and ways of responding to them. They further state that expert nurses, when deeply engaged in a situation, do not need to detach themselves to work out ways of solving problems, and instead focus on actions needed. By contrast, experts in this study have shown this practical ability when patients were following a 'normal' trajectory of recovery. However, when slight deviations from this picture occurred the experts used an intuitive grasp to initiate reflection and analytical thinking to identify the area of concern and direct their response.

A further outstanding difference lies in the relationship between time spent in practice and the development of an expert level of practice. The findings of this study indicate that, for some nurses, it is possible to become an expert in a field of care after five years. However it is just as possible for a nurse to be functioning at a competent level after the same period of time. By contrast Benner *et al.* continue to offer the five year time period as an indicator of at least proficient if not expert practice.

In summary, it is apparent from this comparison of the four levels of nurses' expertise which emerged from the findings of this study and those described in Benner *et al*'s model that a number of differences require further investigation. Two particularly important differences arise in relation to years of practice and levels of expertise and the role of intuitive recognition in the clinical judgement of nurses across the levels of expertise. Further research in the form of a longitudinal study of nurses from newly qualified to five years post-registration would be particularly useful. Clinical judgement in practice could offer a central focus for the exploration of the progression of these nurses through levels of clinical expertise.

CRITICAL QUESTIONS

A number of important issues arise from the discussion of the findings of this study. These are addressed below in the form of three critical questions. The first asks, is there a need for a clinical career structure that reflects expertise? The second, are the indicators valuable in the assessment of clinical competence; and the third, can expertise be taught?

1. IS THERE A NEED FOR A CLINICAL CAREER STRUCTURE THAT REFLECTS EXPERTISE?

The findings of this study have identified the existence and vital importance of expert practitioners in both the surgical and Intensive Care arenas. It is clearly necessary for management structures to be formed to support their continued presence in the clinical field. Without a clear clinical career structure these skilled clinicians may be forced to take managerial or educational posts, or to pursue alternative career pathways for advancement. Currently there appears to be very little professional or financial incentive for skilled ward and unit staff and 'consultant nurses' such as Clinical Nurse Specialists and Nurse Practitioners to remain within their fields of expertise in England.

A clinical career structure based on Benner's (1984) five-stage model of expertise was formulated and implemented in Australia in an attempt to address this very serious concern (Silver 1986a, 1986b). The principles of this framework may be useful in building a clinical career structure which would support and sustain the development and maintenance of skilled nurses in the clinical field in Britain. However, one of the selection criteria utilised across the five levels of this framework is years spent in the field of practice (Silver 1986a). In view of the findings of this study, caution is recommended in placing importance on years of experience in the context of specific senior positions with a career structure.

Alternative opportunities available to the expert nurse in terms of joint appointments with universities have become popular, but are not without their difficulties in terms of fulfilling the needs of both clinical and academic settings (Sparacino 1992). It is believed that the advanced nurse who acts as leader, consultant, teacher and researcher within her clinical field is best served by a career structure which allows her to retain a focus on patient care and remain in the clinical setting. Such posts currently lack recognition by hospital management both in terms of financial remuneration and recognition at an appropriate 'grade' and job description. The current career structure only offers these rewards and incentives to management posts. Thus there is a need for change to recognise the worth of the clinical consultant nurse with a carefully constructed role in clinical practice.

The findings of this study suggest the following factors would be useful in the selection process of suitable applicants for the role of a clinical consultant

nurse. Motivation and commitment to the field of nursing practice are important personal characteristics in applicants for these posts. Evidence of ongoing professional education combined with sustained experience within the clinical field are also important prerequisites. In particular, current field-specific, post-basic courses and/or post-graduate qualifications offer evidence of current theoretical knowledge needed for expert practice. Evidence of the regularity and frequency of involvement in clinical practice is also vital to the advanced practitioner's portfolio. Use of narratives based on recent episodes of practice provide the form of evidence necessary to demonstrate expert knowledge, clinical judgement and practical skills in the field of practice.

However, it is not sufficient to establish this type of post without a career structure which would accommodate every level, from the newly qualified beginner to the expert consultant nurse. The findings of this study provide evidence of four levels of expertise which could be built upon to devise a four-level clinical career structure, culminating in the clinical consultant nurse.

2. ARE THE INDICATORS VALUABLE IN THE ASSESSMENT OF CLINICAL COMPETENCE?

Competence in nursing is a term which appears to be construed either from a behavioural or intellectual aspect of practice. World Health Organisation (WHO) (1988) refer to both of these aspects in defining competence as

> the ability to carry out a certain professional function (e.g. nursing), which is made up of a repertoire of professional practices. Competence requires knowledge, appropriate attitudes and observable mechanical or intellectual skills, which together account for the ability to deliver a specified professional service (WHO 1988: 68).

The ambiguity of the term is apparent, as many understand competence in terms of what individuals can 'do' rather than what they 'know' (UDACE 1989). Others see clinical competence as more to do with qualitative differences in levels of nursing performance (Benner 1984; Burns 1992). In keeping with the latter understanding of the concept, Boss (1985) argues that competence involves values, critical thinking, clinical judgement, attitudes and integration of theory. Phillips *et al.* (1993) go further, and claim that competence is understood and continually reshaped through the practice of nursing. Thus for some the meaning of competence reaches beyond the

observable application of knowledge and skill, and extends to include the thought processes needed for making decisions affecting patient care.

Competencies are seen as a set of qualities which are meant to measure performance in actual practice settings. However, as noted in the findings of this and other studies, much of nurses' professional knowledge is only made visible through descriptions of decisions made and actions taken in episodes of practice, rather than through the practical or behavioural aspects of their work (Fish *et al.* 1991). Yet a set of competencies are often organised into measurement tools which describe observable or behavioural components of nurses' work, and as Benner notes, if 'central competencies [are] overlooked, the effort spent in refining measurement techniques is wasted' (Benner 1982: 303). The problem therefore lies in the ability of any measurement tool to capture the complexities of the nurses' thoughts, decisions and actions in practice.

There is innate difficulty in attempting to measure different levels of nursing expertise through a framework of competence. The emotional, intuitive and creative dimensions of nursing expertise do not readily translate into the behavioural and measurable competencies so desired by general management (Hart 1991). The professional artistry of the expert practitioner is often undervalued by managers (Meerabeau 1992). Indeed, recognition only appears to be gained when nurses take over the technical work of medical doctors (Hart 1991). Managers and purchasers of nurse education programmes seek tools which will explicate, code and classify the competence of nurses to provide measurable outcomes of their education in practice. They question the importance of qualities related to the individual in the context of practice, and seek the means to characterise skilled practice in a more quantitative and generalisable fashion (Cash 1995).

The findings of this study confirm the qualitative nature of the differences found in nurses' levels of expertise. Endeavouring to capture these differences within a set of competencies is hugely problematic. Historically, competencies have not endeavoured to capture the qualitative differences that accompany nurses' movement from one level to another across the continuum of clinical expertise. More recently, Australian and North American professional nursing groups have made an effort to move away from the

behavioural premises that have dominated the formulation of these competencies.

In Australia, a set of national competencies based on Benner's work were established to plot the progress of undergraduate students prior to general registration (ANCI 1994). Further, a post-registration career development framework, also based on Benner's (1984) model, was introduced in South Australia (Gaston 1989). This career development model tied the expectations of qualified nurses to each of Benner's five levels of performance.

Further research in the USA, under Benner's guidance, has resulted in adaptations of her domains of knowledge into sets of competencies for nurse practitioners (Brykczynski 1989) and clinical nurse specialists (Fenton 1985). A later summary of the similarities and differences of these two sets was also conducted (Fenton and Brykczynski 1993). Sutton and Smith (1995) have also sought to consider Benner's domains in relation to advanced nursing practice.

To a certain extent this type of application of Benner's (1984) model has also occurred in the United Kingdom. Hogston (1993) argues that the UKCC (1990) has used Benner's five stage model as a base of expectation of nurse development from competent novice to competent expert over a period of five years in clinical nursing practice . Yet, as seen in this study, nurses can vary considerably in terms of academic qualifications, experience, expertise and therefore level of competence across a period of five years.

The findings of this study provide a useful framework for the development of competencies connected to the four levels of expertise. These indicators of incremental changes in levels of expertise may prove helpful when endeavouring to distinguish expected competencies at different levels of practice. For example, nurses were found to focus on mastering and completing tasks during the advanced beginner level of practice. Therefore a set of competencies could be formulated for this group which commenced with the procedural aspects of care. Having progressed to the competent level, an increasing focus on the skilled nurse's more complex activities in patient care would seem appropriate.

The findings of this study suggest that indicators of the ability to function at specific levels of nursing practice may best be understood through participant observation and narratives of patient care episodes. As such, these indicators may be a useful aid in ascertaining the focus of a nurse's attention and her ability to function within the field of practice. The findings of this study demonstrated that the professional artistry and skilful caring of an expert can be made visible through observation and description of practice. Nurses who functioned at the expert level of practice provided rich evidence of autonomous practice in which they gave flexible and holistic patient-centred care while directing and teaching others within their own clinical worlds. These aspects of skilled practice could also be demonstrated by maintaining professional reflective portfolios in conjunction with clear evidence of continuous up-dating of post-basic and academic qualifications in nursing. These portfolios may offer a more effective professional evaluation of the nurses' expertise than relying purely on a set of competencies which reflect skills learnt at advanced beginner or competent levels of practice.

Cash (1995) criticises the authenticity of Benner's (1984) methodology of determining what constitutes expert practice through the decision of a specific and empowered group. He argues that domains of nursing and expert practice could therefore be decided by groups or individuals that possess some authority. This is an interesting concern - how best can experts be evaluated? It would seem, from the findings of this study, that nursing peers are able to make sound judgements of expertise within their field. The judgement reached by a group of nurses at different levels in the same field of practice offers one way of identifying a nurse's ability to function in practice. Determination of an individual's level of competence could be reached through consideration of narratives and observation in practice. Small group discussions of selected incidents and aspects from practice may also be helpful in ascertaining the nurses' levels of competence. These approaches are likely to reduce the risk of false recognition of nurses as experts by those holding management power within an institution.

3. CAN EXPERTISE BE TAUGHT?

The findings of this study suggest that nursing expertise cannot be taught but its development can be nurtured, fostered and encouraged by setting the right climate within clinical and educational settings. The findings of this study identified a web of factors which underpinned the development of expert

practice, and these need to be in place if progression is to occur. There are several personal factors which emerged as essential prerequisites to knowledge development. First, the intellectual capacity for thinking critically and reflectively about issues pertaining to practice was noticeable in all nurses practising at the advanced levels in this study. Further, motivation toward career-long continuing professional education and commitment to the development of skilled professional practice were fundamental personal traits in the expert clinical nurses. These characteristics cannot be injected into the disinterested, but motivation and dedication to the profession can be promoted by positive support from colleagues, mentors and managers.

Educational factors must also be taken into account if the development of expert practice is to take place. Not only is the content of post-basic courses important, but the process of how it is taught appears highly influential in the nurses' progression of knowledge, skills and expertise. Advanced nurses at the proficient and expert levels drew strongly from field-specific courses made available early in their careers. Absence of formal educational input places nurses at a disadvantage, as they must seek theoretical knowledge through informal educational sources which provide piece-meal understanding at best. Therefore it is believed that post-basic foundation courses need to be made available to nurses entering specialty fields of nursing practice.

Courses which offer a strong basis in bio-physical and psycho-social sciences, nursing skills and knowledge provide a sound platform in the advanced beginner and competent stages of learning in the field of care. Once these skills and knowledge have been acquired, further understanding and engagement in interpersonal relationships figure prominently in expert nursing practice. A strong focus is needed within clinical and educational settings to encourage reflective thinking to assist nurses' to develop their own and others' knowledge in practice. Skills of reflection assist the synthesis of forms of knowledge which tend to be excluded from academic teaching and are important to the development of nurses' expertise (Benner *et al.* 1996).

The findings from this study show the importance of both educators and practitioners in the development of nurses' knowledge and skills across the levels of expertise. Logan and Boss (1993) also described how the learning of nurses at each level was enhanced by strategic targeting by skilled practitioners and educators in the field. Fish and Purr (1991) recommend

educational preparation and evaluation to ensure that mentors have appropriate theoretical and practical knowledge and understand the roles of teaching and learning to guide others in practice.

The findings showed the most powerful role models on nurses' learning were the very skilled advanced practitioners who had deep theoretical and experiential knowledge of their field. However, nurses at each level had knowledge and skills which were needed by those in the process of learning. Thus for development to occur an effective skill-mix must exist within wards to allow nurses at each level to be supported and able to share their knowledge during events in practice.

There is no doubt that a partnership needs to be forged between educators and practitioners to foster the development of nurses in practice. Thomas *et al.* (1991) and McMurray (1992) also believed that educators must serve as role models to inspire intuitive as well as analytical thinking in practice. McMurray recommends exposing nurses to a variety of expertly handled clinical cases either through field experiences or simulated case studies. However, advice on this issue is contrary as other authors have found that simulation may not reflect nurses decision-making as it occurs in practice (Padrick 1990; Radwin 1995). Whilst simulation provides opportunities for the beginner to practice, the complexities of real life are lost, and forms of knowledge which come into play within actual patient-nurse interactions are absent.

It appears important for nurses to learn how to develop knowledge, with the support of knowledgeable colleagues, through reflection on experiences in practice. Guided reflection which is orchestrated by facilitators from outside of the ward setting is seen as a worthwhile innovation to assist nurses to think about shared experiences in patient care (Scammell 1996). It would seem that a learning climate must exist and be sustained by all concerned including practitioners, educators, and managers, if the growth of expert knowledge and skills in practice is to occur.

CHAPTER THIRTEEN: CONCLUDING REMARKS

The findings from this study offer new explanations and insights into the development of advanced nursing practice. These findings, gathered through a qualitative approach to the field, provide an original framework for understanding clinical nursing expertise. They also confirm a number of the elements described in Benner *et al.*'s (1996) model of expertise. In particular, the existence of four distinguishable levels - advanced beginner, competent, proficient and expert - on a continuum of expertise is strongly supported. However, the indicators which emerge from this study to identify these four levels of practice are quite different from those offered by Benner *et al.*' These four qualitatively different indicators of nurses' ways of functioning need to be tested through research for potential use as a framework for identifying expertise in practice in similar settings.

The findings also offer alternate views to several rather crucial tenets underpinning Benner *et al.'s* model. The findings provide a detailed description of the changing relationship between intuition and analytical processes in nurses' clinical judgement across the four levels of expertise. This interplay between linear thinking and intuitive awareness shares some similarities with Benner *et al.*'s description of expert decision-making. However, the findings of this study offer a very different explanation of the intuitive and analytical processes involved in the clinical judgements of nurses at the advanced beginner, competent and proficient levels of practice.

Interestingly, the findings from the study also share some similarities with the more recent cognitive theories which recognise both factual and experientially learnt information in decision-making. Yet a gap still remains as cognitive theories continue to dispute the place of intuitive processes in decision-making. Researchers using cognitive frameworks continue to guide nurses' descriptions of their decision-making through the use of verbal protocols, pre-coded analytical frameworks and simulated case scenarios. This study shows that the actual thoughts and feelings of nurses' decision-making can be captured when focused on 'everyday' episodes of patient care. It is suggested that studies based on cognitive theories need to be made more open to perceptions outside of linear thinking and focus more on actual events of nurses' decision-making.

This study sheds light on several aspects of the complex phenomenon of nursing expertise amongst nurses working in specialty surgical wards and intensive care units. For these nurses, a web of interdependent influences appears to facilitate or inhibit the acquisition of expert skills and knowledge. While these factors are not new to the field, their significance in the development of expertise is not so strongly emphasised in previous studies. Intellectual capacity appears to be a vital ingredient, but the power of motivation and desire to achieve an advanced level of skilled practice cannot be underestimated. These qualities channel the person's interest, intensity and commitment to lifelong learning through, and for, the evolution of masterly practice. A constant stance of reflective inquirer appears necessary for continued learning from patient-care experiences and through informal and formal education pathways. Furthermore, high quality role models emerge as essential guides to assist nurses to reflect and synthesise clinical awareness with a comprehensive understanding of bio-physical and psycho-social knowledge related to nursing practice.

Significantly, theoretical knowledge emerges as far more important to the development of expertise than has been previously established through qualitative research in this field. By contrast, Benner *et al.* hold that the development of expert practice is, to a great extent, dependent on knowledge gleaned from practice. Yet the correlation suggested by Benner *et al.* between years spent in practice and increasing level of expertise is not supported in this study. Furthermore, the findings of this research offer interesting insights into why some nurses continue to function at the competent level after many years in practice. The relationship between theoretical and experiential knowledge also emerges in a very different way in this study from that described in Benner *et al.*'s model of nursing expertise. Benner *et al.* underline the importance of learning from practice to the development of skillful care. Yet it is clear from these findings that the development of expert nursing practice requires ongoing active relection on in-depth and up-to-date theoretical knowledge as well as understanding gained from clinical experience.

This study provides a snapshot of the levels of the nurses' expertise within their current field of practice at the time of the research. The potential to explore each nurse's expertise was therefore limited by opportunity. However, the credibility and dependability of these findings can be considered through the audit trail laid across the study. Evaluation of the potential transferability and applicability of these findings should follow the framework offered by

Lincoln and Guba (1985) for establishing the trustworthiness of a qualitative study. However, further research is needed to inform nursing education and practice in relation to understanding the nature and development of clinical expertise. Indications for further research, found throughout the discussion chapter, are summarised.

There is a need to further explore how personal factors, such as motivation, influence nurses' development of clinical expertise. The impact of the biophysical and psycho-social science content of post-basic courses on the development of nurses' clinical expertise also requires further investigation. Further research is needed to examine how other health professionals influence the development of qualified nurses' knowledge in clinical practice. Also how 'reflection on experience' affects nurses' understanding of patient care.

An investigation of how nurses and ward sisters make judgements on their current level of clinical expertise would offer useful additional findings to the field. A longitudinal study would offer a further opportunity to explore the relationships between knowledge, experience and reflection, intuition and analytical thinking in nurses' development across the continuum of expertise. A further step in the ongoing research process would be to explore the potential development of a career development model and competencies based on the indicators of developing expertise identified from this study.

Finally, it is important to note that the findings of this study sit within a wider body of knowledge which incorporates the exploration of clinical expertise by other academic disciplines. The study of novice and expert practice continues to be undertaken by researchers from a range of fields including nursing, psychology and cognitive science. It is hoped that this research offers useful insights into the influences on and indicators of clinical expertise that will add to the current understanding of the field within and beyond the nursing profession.

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APPENDIX (i)

OBSERVED SEQUENCE OF PATIENT ASSESSMENT BY ITU NURSE (1/F)

Patient having had a C.A.V.G. transferred onto I.T.U. bed from trolley directly from theatre.

Commenced assessment 1140 HOURS

N. Directing theatre staff re organising move of patient from trolley to bed. Attached IV infusions to the stands attached to the bed.

O. (Anaesthetist) set the Ventilator rates and connected the patient to it. Handover of the patient's management in theatre and treatment orders by the Anaesthetist.

N. Transfer of the patient from the trolley to the bed. Connecting transducer line from the patient to the monitor. Observed chest drains. Examining syringe pump for patency and accurate delivery.

O. (nurse) Organising and hanging urinary catheter tubing and drainage bag and chest drain tubing and bottles.

N. Connecting patient via ECG leads to the monitor and observing transducer line. Looking at patient's chest movement.

O. (nurse) Ongoing handover from anaesthetist. **O.** (nurse) attached temperature peripheral probe to the patient s foot.

N. Organised and set rates of IV infusion.

O. (nurse) put bed head up and covered patient with clean linen.

N. Checked monitor readings. Further discussion with **O** (Anaesthetist) re patient and observing monitor readings. Checking transducer line.

O. (nurse) Organising papers for documentation of observations.

N. Checking monitor readings and transducer line. Talking with **O.** (another doctor). **N.** Taping transducer onto patient's arm. Removing towel from under patient. Talking with **O.** (another nurse) and other doctors outside of the patient area. **N.** Putting cot sides up. Patient moves arms in a restless manner - reassurance by **N.** Checking monitor readings. Holding the patient's arms to reduce agitated movement.

N. Talking with **O.** (surgeon and anaesthetist) re patient's condition and speaking to wife. **N.** Transferring syringe pump to other side of the patient's bed. Pumping up outer bag on IV infusion. Rearranging IV infusions. Talking to **O** (another nurse and doctor) . Rearranging of IV infusion and transducer lines. Handover by **O** (doctor) re discussion with patient s wife. **N.** Requested **O.** (nurse) to take an ABG. **N.** Sent word to patient's wife via **O.** (nurse). Ongoing conversation with **O.** (surgeon and anaesthetist). Checking IV drug rate with **O.** (anaesthetist). **N.** Set up IV infusion through IMED pump. Ongoing discussion with **O.** (anaesthetist). **N.** Checking monitor readings. Gave patient's observation charts to **O.** (anaesthetist) and **O.** (nurse) took ABG.

N. Checked urinary drainage output. Looked at patient's chest and face. Talked to the patient. Checked monitor readings. Checked IV infusions. Looked at the patient's chest and face. Documentation. Talking to **O.** (anaesthetist) ongoing during the following activities. Checked IV infusions. Documentation. Checked monitor readings. Documentation. Ceased conversation with **O** (anaesthetist).

N. Checked monitor readings. Documentation. Applied thermometer under patient's arm. Checked monitor readings. Documentation. Checked monitor readings. **O.** (nurse) returned with ABG results discussed with **N. N.** Checked monitor readings, documentation. Checked IV infusions., documentation - organising paper work. Checked syringe pump rate. Checked monitor readings. Documentation.

APPENDIX (i) continued

OBSERVED SEQUENCE OF PATIENT ASSESSMENT BY ITU NURSE (1/F) (continued)

O. (nurse) discussed with **N.** re increasing medication rate. Discussed with **O.** (anaesthetist) re Potassium level and drug rate, route and administration.

N. Documentation. Checked monitor readings. Talked with **O** (anaesthetist) whilst continuing documentation. Looked at the patient. Applied labels to the IV medication infusions. Talked with **O** (nurse) re getting further medications for the patient. Checking with **O** (anaesthetist) re drug infusion. Milking chest drains. Talking with **O.** (surgeon). **N.** Marking chest drain bottles re amount of drainage. Milking chest drains and observing drainage. Documentation. Talking with **O.** (anaesthetist) re drug infusion. Talking with **O** (nurse) re drug order amount.

N. Filing patient's x-rays out of unit area. Checking drugs with **O** (nurses). Requested **O** (nurse) to obtain blood pack from transfusion. Checked syringe pump. **O** (nurse) remained with patient. Discussed medication infusion with **O** (nurse). Checked IV infusions and monitor readings. Asked **O** (nurse) for blood pack (dropping BP). Talking with **O** (nurse). Documentation.

N. Checked IV infusions. Checked bed level. Checked patient's feet. Covered the patient with more linen. Commenced making up IV medication infusion - ongoing during the following activities. Talking with **O.** (nurse). Tidying patient unit area. Checked monitor readings. Documentation. Checked monitor readings. Talking to **O.** (nurse) re patient's wife. Documentation. Checked monitor readings. Removed screens between patients to observe other patient during other nurse's absence. Drug cupboard keys returned to **N.** by **O** (nurse). Checked IV infusions. Checked monitor readings. Organised another IV line for medication. Looked at another patient. Looked at own patient. Checked monitor readings. Alarming monitor. Checked transducer line. Completed mixing IV medication infusion.

N. Attached infusion to a drip stand and to the patient. Looked at the patient whilst tidying bed area. Checking blood pack with **O** (nurse) and then to patient's ID. Checked monitor readings. Talking with **O** (nurse). Weighing and attaching blood transfusion. Looking at patient's arterial line. Checking monitor readings. Regulating blood transfusion rate.

Completion of assessment. 1228 HOURS.

APPENDIX (i) continued

OBSERVED SEQUENCE OF PATIENT ASSESSMENT BY SURGICAL WARD NURSE (2/E)

Patient had undergone a Total Laryngectomy and then spent approx. an hour in recovery.

[On walking up the stairs to the recovery area **N.** proceeded to summarise the patient's pre-operative condition for the researcher and detailed how he thought the patient was likely to progress in the post-operative period.]

Commenced assessment 1530 HOURS

N. In Recovery speaking to the patient - Asked how he felt. Observed the patient from head to toe. Checked the urinary drainage output via the catheter. Inspected his tracheal stoma with his pencil torch. Assisted **O** (recovery nurse) with attaching a tracheal humidifier.

N. Looked at the patient's face. Read the recovery notes. Took the patient's pulse while looking at his chest. Inspected the tracheal stoma again with the pencil torch. Inspected the IV infusion line and the three wound drains. Checked the cardiac monitor readings. Examined the patient's neck/chest wound and dressings. Washed hands. Looking at the patient. Checked the IV infusion rate. Looked at the patient's neck and asked him if he was experiencing any pain.

N. Handover from **O** (recovery nurse) re medications, patient's urinary output, IV infusions, oxygen and analgesia. Examining the stoma region of the patient's neck with **O** (recovery nurse). Discussion with **O** (recovery nurses) re sitting the patient up as lying almost flat. Talked to the patient about the movement and then sat him up. Checked the patient's wound. Asked the patient if he felt okay. Checked his pulse and talked to the patient about the transfer to the ward. Checked the patient's drains. Queried any other drainage output during theatre with **O** (recovery nurse).

[**N.** Turned to **O** (researcher) and discussed with her the use of a tracheal/oesophageal valve within the stoma and the expectation of the healing of the patient's wound and his resultant speech ability.]

N. Checked the patient's pulse. Inspected the patient's stomal wound. Discussed the bleeding from the wound with **O** (recovery nurse). and the absence of a tracheostomy tube due to the size of the stoma. **N.** Talked with the patient about his transfer to the ward from recovery.

N. Turned to **O** (researcher) while waiting for an oxygen cylinder to be brought to recovery for the transfer re the stability of the patient's condition, tracheal stoma condition and the expectation of clear speech with the presence of the tracheal valve.

N. Followed up to recovery by **O** (ward nurse) re non patient matter. **N.** responded discussed the concern and **O** (ward nurses) left recovery.

TRANSFER TO THE WARD. Talked to the patient during the transfer through the lift to the ward. Changed over the recovery 02 equipment to the ward equipment. Told the patient h was returning back in his room on the ward.

N. ARRIVAL On THE WARD Hanging up of IV infusion bag on the ward IV stand. Checked the patient's pulse and respiratory rate. Checked the IV infusion rate and patency. Adjusted the tracheal humidifier. Took the patient's blood pressure. Charting of the observations.

O. (Sister) assisted **N.** to reposition patient. **N.** Handed over information to **O** (Sister) re the patient's drains, IVs and drug infusions.

APPENDIX (i) continued

OBSERVED SEQUENCE OF PATIENT ASSESSMENT BY SURGICAL WARD NURSE (2/E) (continued)

N. Explained to the patient re movement up the bed. Performed tracheal suction through the stoma. Discussed with 0 (Sister) re type of wound dressing and positioning of the patient. Checked the pulse and asked the patient how he felt. Discussed the possibility of dizziness and lowered blood pressure. Cleaned the oozing blood from the wound and betadine from the patient's chest. Explained to the patient about the blood loss. Explained and gave the call bell to the patient. Charted observations.

N. Handover to 0 (Sister) taking over the patient's care giving a detailed summary of wound, drains, positioning, 02, potential use of tracheostomy tube if necessary, drugs, IVs, urine output, naso-gastric feeding tube, neurological state, analgesia/pain site, dryness of mouth, general status, observations/vital signs. Discussion with 0 (Sister) re influence of the drug Dopamine and the patient's 02 saturation level.

Completion of assessment 1630 HOURS,

NB
N refers to the participating nurse who was being observed within the study
O refers to any other health professional.

APPENDIX (ii)

EXPLORATORY INTERVIEW SCHEDULE

The interview schedule will be pre-piloted and piloted to develop an effective approach and therefore the questions will be refined through these stages of development within the research project.

R.G.Ns VERBAL DESCRIPTION OF THE PATIENT ASSESSMENT

QUESTION 1. **"Can you describe each step you made to gather information in the patient assessment you just performed on your patient?'**

INTERVIEW WITH THE NURSE

The verbal description will be followed by an interview with the R.G.N.

QUESTION 2. **"How would you describe the approach you used to gather the information together?"**

QUESTION 3. **"Can you describe the reasons for the approach you used to gather the information?"**

QUESTION 4. **"Can you identify any influences on the reasons for your approach to the gathering of the information ?"**

QUESTION 5. **"Could you summarize your educational background in nursing or applied disciplines?"**

QUESTION 6. **"Could you summarize your clinical experience as an R.G.N. in the same or similar clinical nursing situations?"**

QUESTION 7. **"Are there any other experiences you have had that you feel have influenced the way you approach patient assessment.**

APPENDIX (iii)

SEMI-STRUCTURED INTERVIEW SCHEDULE

QUESTION 1. "Could you describe the sequence of steps you took in the assessment?'

QUESTION 2. "Do you feel that there is a specific approach that you use each time you perform the first post-op. assessment of your patient?"

QUESTION 3. "If yes, can you describe it for me?

QUESTION 4. "Is it an approach that is identified in nursing textbooks?

QUESTION 5. "Are there any special reasons why you approach the postop. assessment this way?"

QUESTION 6. "How did you first learn this approach to patient assessment?"

QUESTION 7. "What place do you think psychological assessment of your patient has in the first post-op assessment?"

QUESTION 8. "To what extent has your own approach to assessment been influenced by courses or role models?"

QUESTION 9. "What is it about about these courses/role models that has influenced your approach to patient assessment?"

QUESTION 10. "How has your own clinical experience of caring for surgical patients altered your approach to assessment?"

QUESTION 11. "Do you ever have intuitive feelings about your patient during the postop assessment?"

QUESTION 12. "What place do you think intuition has in the assessment process?"

QUESTION 13. "Imagine there is a continuum of expertise in cardiothoracic I.T.U. nursing. It ranges from novice (the beginner) to advanced beginner, competent, proficient and finally expert.

QUESTION 13 (continued) "Where would you place yourself on that continuum?
" "Why?"

QUESTION 14. "What place do you think calmness or anxiety holds in determining a nurse's level of expertise?"

QUESTION 15. "Can you tell me about the clinical areas you have worked in since you qualified as an R.G.N?"

QUESTION 16. "Could you tell me about the courses you have taken in nursing and other fields?"

QUESTION 17. "Is there anything else you would like to say about assessing patients post-operatively?"

APPENDIX (iv)

R.G.N. INFORMATION SHEET

WORKING TITLE OF RESEARCH PROJECT: AN EXPLORATORY STUDY OF THE INFLUENCE OF EXPERIENCE ON THE R.G.N'S APPROACH TO PATIENT ASSESSMENT.

RESEARCHER: LINDY KING

Dear colleague,

As you may be aware there have been many studies performed in the area of nursing assessment and decision making. However, results from these studies have still not made clear which are the most effective strategies for nurses to use. In response to these gaps of understanding the focus of this study will be to identify some of the influences on the R.G.N's approach to gathering information during patient assessment.

The approach to this study will be quite informal and take the form of semi-structured tape recorded conversations about the assessment process. In order to gain a full understanding of the process it would be helpful if you would allow me to be present at the time of assessment. When you have a break in activities, I will ask you to describe the information gathering part of the assessment and then reflect on the reasons for the approach you used. All data collected during this study will be kept strictly confidential.

Your participation will be greatly appreciated and will be vital to the data collection component of this research.

APPENDIX (v)

CONSENT FORM

WORKING TITLE OF RESEARCH PROJECT: AN EXPLORATORY STUDY OF THE INFLUENCE OF EXPERIENCE ON THE R.G.N'S APPROACH TO PATIENT ASSESSMENT.

RESEARCHER : LINDY KING

I have read the information sheet concerning this research study and understand what will be required of me if I participate in the study.

I understand that I may withdraw from this study at any time without giving any reason to the researcher.

I agree to take part in this research study.

SIGNATURE..... DATE.....

RESEARCHER'S SIGNATURE.....

APPENDIX (vi)

PATIENT INFORMATION SHEET

WORKING TITLE OF RESEARCH PROJECT : AN EXPLORATORY STUDY OF THE INFLUENCE OF EXPERIENCE ON THE REGISTERED NURSE'S APPROACH TO PATIENT ASSESSMENT.

RESEARCHER: LINDY KING

Dear

I am undertaking a small piece of research and would appreciate your consent to the inclusion of part of your nursing care within the study. The purpose of this project is to identify the influences on the Registered Nurse's approach to gathering information about the condition of their patient after surgery.

If you agree to participate in the research study the following will occur on your return to the ward from theatre. The nurse caring for you at this time will make an assessment of your condition and I will observe and record the steps he or she takes during this process. The next stage of the research will involve an interview with the Registered Nurse in which we will discuss any influences on the approach he or she utilised to perform your assessment.

All information discussed concerning your assessment will be kept completely confidential. Your participation will be greatly appreciated and will be vital to the data collection component of this research.

APPENDIX (vii)

TRANSCRIPTION 1/P/1

R. Could you just run through the sequence of steps that you took in the assessment of your patient?

N. well first of all I prepare for my patient coming and make sure everything is working. I also spoke to the Anaesthetist as he appeared on the unit before the patient did to find out some information about the patient. So I knew what to expect and he (Anaesthetist) told me the patient had been straight forward through surgery, stable so he had no rhythm problems.. And he did warn me about the gases a bit acidotic. So I would look for that and make sure um if he needed any further correction. I'm aware that he already had two lots of bicarb. So I might have informed him (Anaesthetist) earlier if I still had a problem rather that thinking oh, this is the first time and I'll wait a little bit longer because he's too cold. So, I was prewarned about that, I also asked him (Anaesthetist) if he was Diabetic because he's an Arab gentleman and there's a high incidence of Diabetes from the Middle East which is usually undetected before they come. Um, so I wanted to ask him about that. He said he wasn't. His first sugar was a bit high but I will monitor that myself to see if that will come down. Then when the patient arrives, we have an assistant to help us take the patient back. So, two nurses take the patient back and if it's somebody you know very well they usually know what you prefer to do and we usually have a sort of non verbal communication where she goes for the bottom and I do the top or vice versa. Um it's very, it's who you get used to working with, they know your way of working. Um, but I did say to (Nurses name) I'll do the top and she'd do the bottom. Which she did and then she actually came to the top and started to help me as well. Because the patient's blood pressure was a bit low and we were putting up volume

TRANSCRIPTION 1/P/2

instead. So it was a bit taken away from me putting on the ECG and checking all that. So she took over that whilst I dealt with the low blood pressure.
So when the patient's first on the bed I'm watching the colour of the patient the minute he come's in and I see the patient on the trolley. See the patient's colour um and um, that will tell me if the patient's breath-
ing adequately or being ventilated adequately. Um whether the chest is moving. We put him on the ventilator make sure the pressures are okay and whether the chest moves equally and that the stomach is not rising, the tube is in the right place. So that I can put the alarms on. And then I can turn my attention to a little bit further down the patient and I can then
look at the ECG. Make sure that he's not got any life threatening arrhythmia that needs immediate attention. Um, we put on the arterial line and make sure that there's a good cardiac output. Um because you could put on an ECG and have a rhythm and people like go oh, god what's this, but you put on the arterial line and you've got a good blood pressure and so that gives you time to make a decision about what the ECG trace is telling you. Um, we then turn our attention to
the chest drains, is there much drainage is it um, acceptable for the size
of the patient or is it life threatening? Is it going to start to drop the patient's blood pressure, is it excessive? And on an adult patient when they first come back eighty to a hundred is usually quite acceptable. If, I
mean this patient came back and he did have two hundred and fifty within the first fifteen minutes. But I had been prewarned by the Anaesthetist that he was a little bit wet and he had been taking Aspirin.
So I wasn't too concerned about it and the FFP had been ordered and Platelets. So steps had already been taken I to try and treat the problem which was thought to be Aspirin related. So, I knew that was happening and

TRANSCRIPTION 1/P/3

while I was keeping an eye on that in case it was going to advance into um, a surgical bleed and I might need the surgical team to come back and take him back to theatre. The urine output also I'm watching.

I go, I tend to go down the patient when the patient first comes back. **R. Mmm Mmm.** It's obviously just easier and I find it a good, for me, it's just a good routine for me to go through from top to bottom. Um, it's probably also just that I was taught that way and it becomes a bit probably a bit habitual. But I find it works for me I don't have any problems with it. **R. MmmMmm** Urine output was excessive but he's just had bypass surgery, he's probably had some Lasix upstairs so at this point that would be quite normal to have a urine output in excess of two hundred flowing down the tubes in the first fifteen minutes. Ask somebody to check the gases and Potassium so that we can make sure that the urine output wasn't going to drop the Potassium. To give us an average that might cause it to develop into an arrhythmia if the Potassium is too low or alternatively it could have been too high. If he might have had something in surgery that might have sent his Potassium up. He might have had a lot of old blood or something like that which can result in a high Potassium. But that was okay. The Potassium was within normal limits it was four point six. So I didn't have to um, take any action at that time immediately about Potassium. I asked the doctor later when she came along whether she wanted any supplements in the bag or not. He wasn't acidotic any longer he was fine the base excess was zero so it was just neutral **R. Mmm** and his bicarb. was twenty-one. So he'd already obviously started to correct himself. His PO2 was well over a hundred, it was a hundred and fifty something and his PCO2 was about thirty-two so the gases actually were very good. So, I could write that down, tell the Anaesthetist and not

TRANSCRIPTION 1/P/4

worry to much about that. Just routine monitoring keep an eye unless he visibly changed or there was something an indication to me. That there was some other problem and I will check a gas in about another hour. Um, which she's about to do. I've asked her to do it in about ten minutes time from when we left.

The blood pressure tended to be his main problem when he came back and everything was all right. Everything else was stable. I turned my attention to that and gave it quite a lot of my attention. Er, he was on some Trydil and he seemed a bit reactive to it. If they, the doctors were also a bit reactive and said lets put it up because the blood pressure is going up because he's a bit wet and he might blow a graft. Or he might bleed too much if the blood pressure is too high. So, we increased the Trydil and at one point (Doctor's name) had the Trydil on fifteen which as he said is not an excessive amount - 'cause it's one milligram, it's fifteen/ fifty which is one milligram per ml. But the Anaesthetist had ordered only to go up to ten and so I was keeping an eye on that. And knowing (Anaesthetist's name), knowing the team and knowing what theirpreferences are and how they like their patient to be managed I was just, you know, waiting to see what was happening. If he wasn't going to respond I would have, if (Doctor's name) hadn't sort of um, listened to me then I would have said you know this is what (Anaesthetist's name) wants . Perhaps you would like to ring him and you can talk to him and go around it that way. **R. Mmm Mmm** because otherwise he could have had the Trydil up to thirty and then the (Anaesthetist's name) would have said why did you do that I written him for Hydrallazine which he does like to use it. I know other people find it a bit dangerous um, but he (Anaesthetist) does put from nought to ten. But as I know that Hydrallazine does cause the blood pressure to fall and I've given it quite a lot and I'm quite

TRANSCRIPTION 1/P/5

comfortable and feel competentabout giving it. So I was quite happy to give the um, Hydrallazine as theblood pressure was staying above one forty. So as (doctor's name) had accepted that you know he was a bit better, he was stabling out a bit. The blood pressure was less labile or not jumping up in such a great deviant. Um, so as I said to (Nurse two's name) as I was handing over to her Trydil is now on ten which is the maximum he was scripted for. His blood pressure was between one thirty to one forty if it goes above one forty give more Hydrallazine as per prescription. If, if you find it's not working and you're continuing to give it then ring (Anaesthetist's name) and see what he wants us to do because he might favour us to give him some Nipride. The man has a history of hypertension. It's been my experience here in post cardiac surgery that Trydil is not er, doesn't have a great use in hypertension it's just a personal experience. Um, pre-op. it tends to really have more effect on blood pressure for some reason or maybe its just my experience. Post cardiac surgery we tend to use Trydil just either as if the patient had um an internal mammary, to try and keep the coronary arteries dilated a little bit or on the children as a - to take the preload off. Um, but as a drug solely for hypertension it has its limitations. And if you've got somebody with hypertension like his that is not really responding to ten, fifteen of Trydil then you tend to ring the doctor and ask him if he wants an alternative like Nipride. And then usually he says okay put the Trydil on two or three to keep the IMA perfused and lets add some Nipride which is what I think he would say. But I will actually obviously ask him if he continues to be a problem. Um, what else, um well, just check the gas again in ten minutes. Whilst the blood pressure is down we should try and get a little volume into him because

TRANSCRIPTION 1/P/6

his CVP is three to four and he's on the ventilator.
So it's probably um, as he's on negative um, positive ventilation his CVP is probably lower than that we're getting a reading influenced by the positive pressure ventilation and he's cold. So um whilst we've got his blood pressure down with the Hydrallazine we could try and get some of the blood back in that he's lost. Choose blood at the moment because his Hb was nine before he lost two hundred and fifty mls of blood. So we can, we've got room to give him a little blood back. On the next gas if the Hb is climbing then we can turn it off and open the Hispan again and use that if he needs something to keep him, to keep his CVP more stable. Um, I don't really want to push the CVP up too much because he's (Anaesthetist) actually specified he doesn't want it to go above five.. But I like to maintain it there so if I can sneak a little bit of fluid in without putting the CVP up then that's what I'll do. If it started to climb I'd switch it off and wait for a little while 'til his blood pressure settled. Hopefully he will dilate a bit and we will get a bit more room especially as he's passing quite a lot of fluid there, passing a lot of urine.
Hopefully, that should help warm him up and as he warms up I think everything will stabilise out and all the lines on the chart will come into meet into nice um, normal ranges. Um, the next plan will be once he's warm, well perfused, stable blood pressure, sinus rhythm, good gases then um we would let him wake up One of the things I did do was to put the Morphine on. Although he appeared to be unconscious. N. Um, as his blood pressure was rather reactive I did wonder whether he was waking up from the Anaesthetic but still had a paralysing agent on board. So, I couldn't visibly tell whether he was conscious or not. And the Anaesthetist before, when he came in, before the patient came back did say to me I would put the Morphine on straight away if I was you because the blood pressure is

TRANSCRIPTION 1/P/7

up and down. And to cover the fact that the patient might be awake um, we put the Morphine on so he's not in distress under paralysis there. **R. Mmm**
They're hearing voices and not really knowing where he is and to keep him pain free as well.

R. Mmm, okay we'll stop there for the minute thanks

N. I rabbited on a bit, sorry. [A break for lunch]

R. Okay, so do you feel that um, the approach that you were describing is a specific approach that you use each time you perform a post-operative assessment on your patients?

N. Mmm, yes um, it was what I was taught when I did my ITU course. Was to do a systematic um assessment. So even though I say I start from top to bottom.
I'm starting with you know he's unconscious so, in this case he's had an Anaesthetic. So I'm not going to start doing a full neurological assessment um, at this stage because I know, I expect him to be unconscious. He's not breathing, he's ventilated so I'm looking at his respiratory system. Um, I'm going down the chest, I'm looking at his heart, his blood pressure and his rhythm and then down further I'm looking at his um renal system - has he passed sufficient urine? Is he in any immediate danger, what needs actioning first, um, from that you make your priorities as to what draws your attention first **R. Okay** and deal with that and then you're constantly changing your priorities as to what the patient's needs is to keep him safe and stable.
N. And your goal is to recover that patient from the Anaesthesia in stable manner. Um without causing him any threat to his life um for a successful outcome at the end of the day.

TRANSCRIPTION 1/P/8

R. Mmm Mmm. Do you think it is an approach we could readily identify from nursing textbooks?

N. From a textbook? Mmm. Probably, yes, I mean if you look at cardiac textbooks and they say um, when the patient comes back from theatre check this, this, this you know. It usually gives, not p'rhaps in the order I've used but a sort of list of um, check blood pressure and then it might go on to respiratory. But there's usually some kind of list.

R. Right. So then do you think there are special reasons why you do it your particular way as far as the approach to the assessment?

N. I think my own way is the way I put a priority on things as to be more threatening than others. Although I'm looking at it one thing after another I'm also looking at the whole thing or the whole time. So I'm I'm looking at each system but I'm also looking holistically at the whole patient because they all interlink so much and one has an adverse affect on the other. So even though I'm looking at one I'm scanning the patient constantly to look for abnormalities or something that I should be drawing my attention to. Um, I've lost what the question was, sorry?

R. Oh, just the specific reasons for the sequence in the approach that you take.

N. I think safety. You know, the patient is unconscious therefore he's under anaesthetic therefore he can't breathe. So unless we've got an airway he's going to die basically and we're maintaining the airway. The monitor is on when he comes from theatre so I can see well that's okay. I can tend to the airway I can establish the airway I

TRANSCRIPTION 1/P/9

can assure the patient has got an airway and I can change his monitoring from a portable from the theatre one to the permanent one by the bedside. Um, and then through the systems as I described earlier. I think safety is always paramount in my mind.

R. Mmm Mmm. Can you remember how you first learnt your approach to post-operative assessment of the patient?

N. Mmm by observation um, when I first came here we used to buddy up new people with experienced nurses who were used to taking the
cases back. Used to observe, we used to be talked through it as well. Afterwards you would go through the chart. What, why you did it, the rationale behind what you were doing,what you were looking for. So if it was abnormal, why it was abnormal and how you could help to correct that. Um, and also I think an influence from - I always remember when I did my ITU course and you used to write your assessments. You didn't usedto do care plans as you do now. You used to do a list under headings and we always used to start, the respiratory system and write a report, cardiovascular system and write your report, renal and write your report. So its always been so, a logical pattern to me to follow ah, and neurological is in there as well but further down in this department. But if you're working in a neuro ITU then that might be your priority because the patient might have had obviously had um neurological operation or a CVA or something. So its always been a logical sort of sequence so that you cover everything so that you don't miss anything out.

R. Do you think. You mentioned the ITU course, Do you think that has had a strong influence on your approach to assessment?

TRANSCRIPTION 1/P/10

N. Yes, yes.

R. Yeah? From particularly the point of view of what you were describing?

N. Yes, yes. Because when I did my ITU course I did part of it on a general ITU and then I did, I did do some of it on a neurological ITU. So I did I was able to make the comparisons. And um, it was just slightly different in the priorities you know. It actually was the same sort of training area. It was under the same authority although it was two different hospitals and um the only difference was in the priorities of what you looked at first.

R. Do you think any other courses have influenced your approach to assessment at all?

N. Um, not that I can think of consciously but I'm sure there probably is. Um, I think we learn every day, all the time and things influence us, experience teaches us. Um, you can um an incident or an occurrence could happen that might be not in the norm of assessment that you would pick up quicker if it happened again. Or you would be aware of it with somebody else. It might not be in your realm of knowledge or even, you know, expect it to be in your realm of knowledge um but you might have picked it up along the way and you might pick that up in a patient the next time round. **R. Mmm** or quicker because of that experience.

R. Right. So, then do you think that your own clinical experience has had a great affect on N. Yes, **or influence on** N. Yes, **your approach to assessment?**

N. Yes, very much.

TRANSCRIPTION 1/P/11

R. Can you describe any particular ways?

N. I think in speed in response. Um, and also at the same time not being too reactive to what the monitor is says, not to be too reactive with any support drugs that may be up there you know. If you are a bit inexperienced and the pressure starts dropping you might start oh, put that up quick and put the Adrenalin and put this up. I think you should just take a few seconds look at the whole patient, assess what's happening, what's causing the blood pressure to drop. Don't be too reactive because what you are doing although may in the first few seconds help um, it may not be the best thing. It might be just a little volume needed, not you know, lets push in some more Adrenalin. Um, and I think that comes with experience and confidence and competence. Because if you're just, if you are fairly new then it's quite harrowing and nerve wracking if your patient's dropping their blood pressure and you are by the bed and the doctor is far away. You might if you were um, if you had the authority to change the infusions you might want to er, put the Adrenalin up if. The doctor might have left you an open order you see, and it says Adrenalin from two to eight and they might go straight for that as its on two and put it up. Whereas the right course of action when you look at the whole patient and think well what caused the blood pressure to drop. It might have been that he had a bit of a loss from the drains um, or he suddenly warmed up, which we see a lot in the children. They warm up suddenly and with their small volumes in their bodies they can, you can see a drop in the blood pressure and the CVP has dropped and its just a little bit of fluid and it all settles itself out again.

TRANSCRIPTION 1/P/12

R. Mmm and it sounds from what you were saying that that's come, that's born from the experiences that you've had?

N. I think, I think its experience with me because I haven't, I haven't done a cardiac ITU course. I did a general ITU course um, so its from my experience and practical learning rather than theoretical learning that I've gained that.

R. Right. Do you think role models have had any influence on your approach to assessment at all?

N. Yes, **R. Yeah?** N. Yeah, I think they do, I think. I think if you, I think we recognise in each other good and bad practice. And um, you can watch somebody and think that's - she clever or that was brilliant or um she knows how to do it she's very competent or he or she I mean. And um you might adopt a method that you see because you see it working um, better than perhaps the method you are using.

R. Mmm Mmm. What place do you think, if any, psychological assessment of the patient has in this early postop. assessment period?

N. Difficult um, I think it does have a place because I think it's often, I think it's linked to conscious level as well. I mean if the patient is regaining consciousness underneath um, and he isn't, he doesn't speak English, he's in a strange environment um, and you're not reaching his needs through his, his physical needs through his pain, his anxiety is going to climb. And that might have an influence on the observations that you're seeing and the recordings that you see and the blood pressure or the pulse might go up. Um, and in that way

TRANSCRIPTION 1/P/13

we obviously would first deal with his physical needs to make sure he is safe and then try and talk to the patient. Um, the interpreter did come in with the relatives but as the patient's blood pressure was a bit unstable and erratic at that time and I'd already got lots of people around the bed I thought it inappropriate at that time for them to come in. So, I said to him well come back in five minutes time and then I got rid of few people and let them come in now. I think if there are too many people around the bed the relatives will think there is a big problem and there wasn't a big problem. **R. Mmm** And that might have added to their anxiety to see lots of people around. **R. Mmm** And then I could get the interpreter. When the relatives come, I do try and encourage them to talk to the patient to try and you know reassure them that everything is okay. I mean I know to say operation is over in Arabic and that's about it. (laughs) So that was what I was yelling at him you know, to make sure that he could - the operation is over, you're okay. But er, I do think it is difficult where you have foreign patients to um, adequately meet there psychological needs.

R. Mmm Mmm. Do you think ever have intuitive feelings about your patients in this early post-op. period?

N. Yes. **R. yeah?** Very much, I think so. I think you can get um, you can get a feeling that somethings not right even though all the observations tell you everything's okay. Um, often I've had the feeling particularly with the babies or the children.
N. Now I don't know whether that's something to do, whether that's related to them being a baby or a child and you feel a bit more protective

TRANSCRIPTION 1/P/14

or you feel a bit more concerned or a little bit out of your depth. I don't know but sometimes you can have nice straight lines and you can say I just feel something is not right. The gases are fine, the blood pressure is fine, the urine output is fine, he's warm. I don't know what's wrong but he don't seem right. And occasionally and it is only occasionally you can come back the next day and the patient arrested. But there was no change in those readings they just arrested for no obvious clinical reason. Or there was no warning the patient arrested and you say yeah, I knew there was something not right about the patient but there wasn't anything you could put your finger on 'cause you check and you double check but it's not quite there.

R. Mmm I was going to say actually what you would do in response to those feelings. You were saying check and double check.

N. Well I have, well, yeah you check and you look and you say there's something I've missed you know. Um, and I've actually said to a Consultant, when he's come in um, I've I've um, and he's said to you is everything alright and I 've actually said to a Consultant well on paper yes but I don't know I'm not happy and he said why and I said don't know there's just something doesn't feel right and he's come and double checked depending on who it is they often do listen.

R. So would you then say those intuitive feelings have come out of the blue or are they based in something else, do you think?

N. I think, no. I think they are um, they are something you're seeing that's not um, the patient doesn't. You always express it as a feeling but you always, you

TRANSCRIPTION 1/P/15

always think um, you look at the patient and you say he doesn't feel as if he's as well as the observations are telling you he is. And you say, well what do you mean and I say well I know his blood pressure is alright but he feels a bit cold to me. But the temperature is telling me he's fine and that. Or um, his gases are fine but his colour looks a bit off to me, does it to you, you know, you start asking people. Um, I think we're quite good here at looking at each others patient's and saying oh, do you think so well I'll check, you know, maybe you're right. N. Because if, I always think if that nurse has been there all day with patient and she says to me there's something wrong um, I know his blood pressure its, nothings changed but he's not as well as he was thisthat morning. Then I'll look closely at that patient, that patient because I see that as that nurse has got to know that patient's physical signs um, and is often perceiving from somewhere I don't know where its coming from um, that something is about to change before it actually changes.

R. Mmm Mmm. So what sort of feelings. Can you just describe for me what it feels like within when you have those sort of intuitive feelings?

N. Frustrating, yeah a bit frustrating um because you feel you ought to be able to pin point it. You ought to be able to support what you're saying to make yourself heard. I mean you can't I mean as I say I have said well I don't think he's right. Um, and I've had a doctor say why and look and search himself because he's trusted my intuition if you like and I've had another one say you're making a fuss he's alright. And yet that patient his recovery has taken much

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longer than would have been anticipated. Its been awfully slow as if there was something not quite strong enough along the way. For want of a better word its hard to describe it really. Um, and even I mean sometimes in an adult as well, you can, you can get a feeling of oh, his observations are alright but, everything is fine. But he's a bit pale, he's a bit vague, he's a bit, he ought to be a bit better than he is. R. Right. Um, and it's not, its and you come the next day if somethings happened like er, he went into AF or he went into VT. Or you know, he threw up and bled two litres you're not surprised because you think, oh,god there was something you know. You felt like there was something going to happen. Um, but I think you only feel it if you are with that patient the whole shift. Its a subtle change that somebody who's the runner or in charge of the whole unit might not see. I think you have to get yourself into that patient's um, observations or rhythm. I don't know what, how, how do you how do you describe it.

R. Do you think then that intuition belongs in the assessment process that nurses go through?

N. Mmm. I'd say yes. I'd rather be safe than sorry. I'd rather have a Nurse say to me oh, its not right and you look at it twice and check that everything is acceptable and even point it out to a doctor and have it reaffirmed that things are okay rather than um, let something p'rhaps that looks insignificant pass by that would then become very significant and may even result in a patient being lost.

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R. Could you imagine for me for a minute that there is a continuum of clinical expertise in cardiothoracic surgical ITU nursing N. Mmm **and it runs from Novice at one end, the um the new RGN to the area and then Advanced beginner, Competent in the middle , Proficient and then the Expert** N. Mmm **at the end as the very experienced clinician.**

R. Could you tell me where you would feel comfortable placing yourself along that continuum? *

N. Um, I wouldn't say I'm an expert because I always - think there is always more to learn. But I would at the same time I would say I feel quite competent to look after anything in um, that are likely to come in the cardiothoracic unit. Um, so well, I suppose I am an expert really but um, we've all got a learning curve that is constant.

R. Mmm I was going to say is there, is it possible to have all the information of that you um were saying its constantly changing?

N. No things change but your parameters are always there. Its always changing when I first came it used to take us three hours to set a bed up.All the equipment has changed it can take us half an hour in fact it can take you less if everything is there. (laughs)
N. I can remember having a screwdriver and taking a bit from there and a bit from there and calibrate everything manually and you know you used to take for ever and you actually really had to make sure everything was working because it took so long. If the patient arrived, you know, it took you so long, you couldn't, it had to work before the patient got there. Because it was too late when the patient was there because everybody was

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screaming and shouting at you because you haven't got half an hour out to fiddle with the machine. **R. Mmm** And now we've changed all the monitor, monitoring um,the technical side advances all the time which aids the nurse in her job, in her role. And of course there's a lot of um, fast tracking these days. **R. Mmm** More selective healthier patients no previous cardiac history might come back extubated um no supports what so ever. No, a couple of central lines um, a bit of replacement fluid for blood loss. Um, and in a um, general hospital may even go back a ward or a high dependency area within twelve to twenty-four hours. Geographically we can't do that here because of single rooms and we tend not to get that sort of patient anyway. **R. Mmm.** Um, because we don't have the mass population coming to us it tends to be specialist referrals. So the work changes as well. It used to when I first came it used to be they were always were ventilated for twelve hours, you know. It was always oh, ventilate 'til tomorrow morning and balloon pump was quite a common occurrence. Now you know, its ventilate until they're warm then take them off and extubate them um, whenever that is, be it two o'clock in the morning that's okay. You know it used to be leave them overnight you know. That's moved on to be more to that individual patient rather than as a routine where you ventilate for twelve hours. Um, become more individual orientated towards the patient rather than a way of, go to ITU and ventilate overnight, we'll extubate them all in the morning when the physio comes. So that's moved on **R. Mmm** I think that in turn has its affect on the patient's stay in ITU becoming, although the average stay for an adult here is still two days. Um because the single room upstairs its not possible for them to be watched or seen although we have telemetry um, its still not deemed a safe area for them to go to um, twelve hours post-op.or

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twenty-four hours post-op. Um, and its the same really with the children some of them could go to the ward area. But they aren't happy about having a child with a central line in because they are in a single room and the baby could get it tied around its throat, around its arm, pull it out, lose quite a significant amount of blood before it could be found. Um, so you know we tend to perhaps over treat them or over care for them in an ITU or an HDU. Um, I mean some of the days can be frustrating when you think this patient should be in the ward um, for its psychological needs. Particularly small children um, and they can't remove the central line because they need IV antibiotics.

R. Sure. Well given that um, a myriad of changes and maintaining expertise in such a whirlwind of change
N. Mmm **it must be very difficult.**
R.What would you say that a person who is expert or near expert in this area - what sort of skills for such as yourself do you need to have do you think?

N. Um nursing skills or management skills?

R. Speaking predominantly of clinical expertise.

N. Clinical expertise um, I think you have to be fairly um, competent with the machinery you are using. Um, not that that's the be-all and end-all of looking after your patient but part of knowing when it's right and when it's wrong and when knowing to make it important and not, not to. Um, you know how to work - the ventilator, how, when to know it's the ventilator that's at fault and when it's you know, forget the ventilator just put them on a mask or you know. When to know to step in and calm everybody down - (laughs) it's not a problem. Um, so you need to know

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about the technical side and how much - when the role of the technical side stops and when your role takes over.

Um, what else? I think being a good role model being able to communicate well with your staff, your doctors with the whole team. N. Being seen to be a member of the team and not above it all you know.
You have to participate in it and to be able to - what's the word I'm trying to look for. I think a lot of the girls would say they feel very comfortable when they work with me. They feel very safe because I'm around er, because they've got trust and confidence in my competence.

N. I think you have got to be very calm when an emergency situation does arise. Um, I think it's important to keep calm even if inside (laughs) you're just as worried and um tense and nervous as everyone else. I think if you can try, make an effort to control that then um, you will keep the situation in hand and everybody will follow your lead. Rather than if you should panic then they will panic and therefore it may result in turmoil. I think you have to be a very, a calm person or a reasonably calm person. But I think with training if you're confident with what you are doing um, if you've got the knowledge and the competence then it's, it's in within the role of your job, you can do that.

Your personality sometimes can creep into it but again if you are competent in what you are doing you can usually control that. If you tend to be a hyper sort of person and scream and shout um, I think even in an emergency situation I think you can come to realise that that's not a good thing. **R. Mmm**

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And be able to self criticise, self analyse yourself er, and be aware of what you can and can't do. Be aware of your own mistakes, look back reflect over situations and think I didn't handle that very well I ought to p'rhaps have done that, maybe it would have been better if I had reacted like that you know. I think to be able to do situational analysis on yourself at times is a good thing a positive thing, teaches you.

R. Right. Mmm well thank you. Would you mind telling me about the clinical areas that you have worked in since you qualified?

N. Since I qualified? **R Mmm.** Well I did my general training and then I did my midwifery training. I didn't really take to Midwifery, I enjoyed it but I didn't take to the crowd of people I worked with in the hospital I was in. So I decided to go back to general and um, at the time there were no permanent staff nurses positions available so I went on night duty. N. On night duty I was relief staff nurse so during six months I worked on every ward in the hospital. **R. Wow.** So as one night Sister used to say to me (Nurse's name) there's not a ward here you cannot run. So I used to work on all the wards um, when the permanent staff nurse was nights off. After, six months of that I was getting a bit fed up. I thought I'm a dogsbody here I need to settle down and get into something and I was thinking of Intensive Care. I'd never been in it, I'd never worked in there but I thought well I'd heard it talked about and I thought it sounds really interesting I wonder if I could um go and work in there. And out of the blue on night um nursing officer, night nursing officer rang me and said um, come and have a chat with me and so I said well, funny you should ring because I want a chat with you. So she said well come and have a chat with me, she goes I think

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you'll be interested to see what I say so I went along and she says um how would you feel about. She said I've got two options for you. She said um, Sister I can't remember her name, wants you permanently in Casualty she said don't say anything I want you to think about this but I would like you to go into Intensive Care. So I though my god, (laughs) all this inner searching. **R. Mmm** Anyway I want you to think about it think about what you want and when you're next on, come back and we'll have a chat. So, um when I went back I said yeah, I'd like to go into ITU. I said I'd actually been thinking of coming and asking you if I could go in there to see what it's like and she said well I think it will be your cup of tea she said I've watched you work and I think you'd like it so go in we'll put you in there and see how you get on. So I went in there initially on night duty um, which was an eight bedded unit. It was a brand new hospital so we had brand new equipment and we had two consultant anaesthetists um who were very keen and because the hospital hadn't had an ITU before because they closed the old one and we moved to the new one. They had an inservice [break while turning the cassette over] and so I went along to a couple of the lectures um, that they were had running because they were actually coming to the end of the program and I just took to it like a fish to water. Only I just thought well this is it, this is what I'm doing nursing for you know. this is what I always envisaged nursing to be. Because I like the detail um, I like having total responsibility for the patient. Um, it feels like you are doing something for someone rather than running around doing, aspirating you know, six peoples NG tubes for the day (laughs) you know. Um, and I really I took to it and I did six months of nights and applied to do an ITU course and got accepted in two places in Sheffield um and in London and the one in London started first so I took that one. **R. Mmm well**

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what a real milestone in your life wasn't it. So, I came to (London hospital's name) in (suburb's name) to do the ITU course. To find um that the experience I'd had over the last six months was far better than the experience that I got on the course because the unit I worked in for the six months was eight beds and brand new equipment, a huge Casualty. We used to be a stones throw away from the M1 **R. Mmm** So we would get big RTAs, we could get industrial accidents from the mines or the factories that were around there. Plus all your big surgical abdominal surgery patients, any head injuries. We had, we covered everything in the general ITU and as I went along to (London hospital's name) and they had six beds so they (inaudible) up but they'd have a couple of M.Is and we had another eight bedded CCU um we'd have a couple of M.Is and er, perhaps a couple of abdominal surgery. Um so I'd seen a lot more different types of ICU patients before I actually went on the course and on what I saw on the course as well. I'd seen more in my general hospital but it stood me in good stead for the actual theory of the course because as they discussed things I could say yeah I'd had experience of that and I could share that with my group. And then when they sent us off to (Wards name) for neuro I actually wanted to go to do the cardiac bit but it was at (another site of the hospital) at that time and they were in the process of closing it down. So we were sent off to do the neuro for six weeks and I didn't really feel I learnt a lot from that. In the classroom probably but in the unit itself the care was basically the same. It was very repetitive um, you find with the neuro obs. that they used to make you do (laughs) full scale neuro obs. there. Nothing like I'd ever seen before in my life you had to have A4 paper and write full hand what you saw every fifteen minutes. **R. Mmm.** We'd just finish you'd start again which seemed to be ridiculous to me just to say

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that that was how they did it wasn't, I didn't think was enough to say that that's how it should be done you know. Um, and it could be quite depressing really as well.**R. Was that a long course?** N. Six months.
R. Six months and you had six months before that in the general?

N. Mmm and then when I left there I came here.

R. So, do you mind me asking how long you have been here?

N. Um, well I haven't been here. I first came here in 1980 but I haven't had twelve years continuous service. Because I did twelve months and then went to Australia.

N. Because I met one of the girls here and we became very good friends and she went to Australia and said come over so I went over there. And whilst I was there I worked in (hospital's name) in the private on the cardiac ward. **R. Right.** And then a position came up on the ITU just as I was, my visa was about to run out. So I said well it wouldn't be fair of me to accept it because I've only got a few more months so um I'll stay where I am and then come back to London. I came back here er, when I came back to London I came back here um, and I was here for five years the second time. During which time I went from Staff nurse to Sister. And um, then I felt I needed a break. I felt I was getting, it was really very busy and I felt I was getting that um, I was getting a bit stressed out and burnt out and I wanted a change so I went abroad again. That time I went to Saudi and I still worked in Cardiac ITU um, but I took a post as a Staff nurse again. While I was there they offered me to the Sister's post but I said no, I'm going I'm not staying (laughs). I've done my twelve months and now I'm going travelling. I did a

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bit of travelling and I came back here again. When I came back the second time there wasn't a post in ITU. So I worked initially in the Cath Lab. part time I did three days a week part time when you come back from Saudi and you're rich you can do these things (both laugh) for a little while. And, um I didn't particularly take to that because I thought it was a bit assembly line you never actually got to be able to talk to the patient because you're on such a speed of time next one in, next one out you know always be the business and that as well. But I thought I don't like this I don't get a chance to have my own part in the patients care you know. You're just the hand servant, just a scrub nurse to the doctor. **R. Mmm.** I didn't really feel it was my thing. So then I did - um, I was the bank co-ordinator here for seven months and in that time, at that time we used to have over two hundred and fifty people on the bank. **R. Oh my goodness.** Not full time but that was the number of nurses we had on the bank. **R. Gosh.** And it was a full time job and we used to use a lot of bank nurses because we were so busy. I don't know whether we didn't have as many core staff but we just seemed to be much busier in those days. Um, we were much busier we used to at one point, we used to have to send first day patients up to CCU and pinch a couple of their beds and put a nurse up there with two of them so we had another bed for the next pump coming back because we used to do.

N. It was nothing to do seven pumps a day six days a week you know. That was the routine that's why I got so tired **R. Sure** and wanted to leave at one point. Um well then I came back again and eventually a post came up here. From bank co-ordinator I went to third floor because I felt I wanted to do nursing I was getting a bit fed up with sitting in an office going around asking how many nurses do you want and being on the phone all

day. Particularly when everybody was so busy and wanted help and I couldn't jump in and help (laughs). So I went to third floor and was a Sister up there for a while on the cardiac floor which I enjoyed but it didn't stretch me. I just got, I got bored. **R. Right.** the girls enjoyed me being there because they said oh, good we'll pick your brains while you're here but after six weeks I was bored, you know. And then a post came up available here again so I jumped at it and came back here.

R. So how long have you been back this time?

N. Back in ITU. I think it is two years.

R. Right. Golly. Have you taken any other courses as well as your general ITU?

N. I recently did the um, Certificate in Management at (health authority) which is validated by B Tech. Certificate in Management National Health Service is nationally recognised.

R. Right. Any University or College courses?
N. No

R. Okay. Do you think there is anything else about postoperative nursing management of patients in the assessment period of time that I haven't bought up that we should discuss do you think?

N. Um, no nothing that comes immediate to mind. Perhaps teaching we haven't mentioned teaching. I think um a good role model passes on teaches, by example teaches by example. Um, Mmm how best to teach a nurse I don't. It depends on that nurse I think how best she learns. Er, and how, how best one can communicate anyway. We all do it in different ways.

APPENDIX (viii)

COMPUTERISED DATA FILING SYSTEM

The process of transcribing, coding and filing of the data occurred through the use of Morse's (1991b) computerised data filing system. This process is described under the following sub-sections - transcribing the interviews into the computer files; adding the codes and categories to the transcribed interview file; preparing the category files; sorting and copying 'units' from the interview files into the category files; homogeneity within the categories and maintaining the 'category' and 'interview' files.

Transcribing the interviews into the computer files

An individual computer data file was made for each observation/interview of participant nurses included within the study. The tape-recorded interviews were transcribed verbatim from the cassette tapes onto the Apple Macintosh Computer. The researcher used a portable Sanyo Memo-scriber Dictating/Transcribing System for listening to the cassette tapes at the same time as typing the taped conversations onto the computer using the following approach. The interviews were typed into the files using one and a half line spacing, 10 point size Palatino font and with a separation of lines between speakers. The left and right margins of the document were set at 1 and 5.5 respectively. The letter **'R'** prefixed all of the researcher responses within the interviews and the researchers responses were emboldened to differentiate them from the nurses responses. All comments made by the nurses in the interviews were prefixed by the letter **'N'** and typed in normal print. Any short or prolonged pauses in conversation were typed into the transcripts as bracketed words e.g. (short pause). All exclamations during the conversations including laughter and expletives were included within the scripts in the same fashion. The lines of conversation were numbered sequentially throughout each transcript page.

Each page of the interview transcript was labelled with the codes of site number, participant number, page number, date of the interview within the interview file. The entire file was then highlighted and a tab point made beyond the right margin of the text for entry of the unit codes and categories of the analysis. This allows access to the section beyond the right margin of the entire text for coding throughout the transcript. The entire content of the interview transcript were then captured within the file.

Adding the codes and categories to the transcribed interview file

Each time a unit was recognised a code was entered in the right margin area. A broken line was entered into the right margin on the line above the unit section of the interview text that

was to be added into a category. The section to be included within the category was identified with the label of the interview transcript which included the codes of site number, participant number, page number and the date of the interview. The category code was entered at the end of the first line of that section of the text. Comments or notes on the content of the section were also included within the margin. A broken line was included within the right margin to mark the end of the section of the text to be added to a category. Thus the first level of coding of the text into broad categories was completed throughout the interview. The interview file was then reduced to its smallest size as a window and remained open and available on the computer screen.

Preparing the Category Files

Once the initial 'unitising' of the interview transcript had been done files were made for each emerging category. This was done by opening a new file and entering the category label and the page number. Then the page of the file was labelled using the site and nurse number. A series of page break lines were inserted at the end of each alternate line in the new file. This was done so that each entry on each page could potentially be separated to become a sub file if necessary at a later stage of the analysis. The size of the category file was then reduced and the file/window was positioned next to the interview file/window on the screen.

The category files/windows were opened and prepared as previously described until each category had a separate file. Each file was positioned in set areas across the screen. Up to twelve files/windows (including the interview file) were displayed simultaneously in this way across the screen. Double clicking on the Title Bar of each file instantly opened the file/window to full screen size. Conversely when the file/window was fully open double clicking on the Title Bar reduced the file/window to the smallest size and returned it to its original position. This makes all files quickly accessible for movement of information between files.

Sorting and copying 'units' from the interview files into the 'category' files

All of the category files were produced to accommodate the broad categories developed from the initial analysis of the interview transcripts and the provision was made for more files to be produced as new categories emerged or altered from the interviews. The interview file/window was then returned to and opened to full screen size.

The first section of the interview text to be sorted into a category was highlighted and copied and the interview file/window was then closed. The appropriate Category file/window was opened and the categorised section of the interview transcript was then pasted into the category file. Each section of data pasted into the file was followed by an inserted 'Page

Break'. Each section of data could then be printed on a separate page for potential sub division of the category file. The pasted information was then saved into the category file and the file/window reduced again in size. The interview file was then re-entered to continue the sorting of the data into the category files. This categorising procedure continued for sorting of all of the sections of the interview transcripts.

Homogeneity within the 'categories'

The contents of each file were continually reviewed before pasting the next 'unit' of interview data into the category file. This approach enabled the researcher to ensure that a segment of text did belong in that category without conducting a search and print of the category. Subcategories could then be developed and new categories made when required through this process. The rigour of the analysis was thus increased by the constant perusal of the researcher (Morse, 1991b). When a category became very lengthy it was divided into sub files through further sorting of the file.

Maintaining the 'category' and 'interview' files

A category folder was opened and each file was placed within the folder. The files were organised by keeping the nurses interviews grouped together from each ward or unit in individual folders. The files were re-entered by opening the appropriate category or interview folder and clicking on the file or files one at a time. The files opened to full screen size and were then reduced to file/window size. The category and interview files/windows then lined up next to each other in the previously organised arrangement across the screen. The category and interview folders were kept on the hard disk of the computer and as copies on separate floppy disks in a locked office.

APPENDIX (ix)

THE FOUR WAYS IN WHICH THE NURSES' FUNCTIONED IN PRACTICE

The four ways in which the nurses' functioned in practice are incorporated below, namely, tasks to holism, learner to teacher in practice, rigid following of set guidelines to flexibility in assessment and dependency to autonomy. Units of data are incorporated in the following section to demonstrate the links between the levels in each of the nurses' ways of functioning in practice.

TASK TO HOLISM

The first example involves a unit of data which relates to a nurse's focus on the completion of the monitoring tasks of patient care. While the nurse's attention on the tasks is high, there is some awareness of abnormal signs in relation to the monitored observations of the patient's state:

I looked through the observations, blood pressure, pulse were stable, no charting of vaginal loss or loss from her thigh wound ... I looked through the drug chart, he was written up for analgesia which seemed to be effective. IVI fluids running no drains, no catheter, hadn't passed urine, hadn't drunk anything. [SURGICAL 5/E/1]	TASK ORIENTATED AWARE OF OBVIOUS SIGNS IN THE PT.

A second example demonstrates a unit of data which was coded in relation to the nurse's apparent focus on achieving the tasks required for monitoring and maintenance of care while demonstrating a greater awareness of the significance of abnormal signs to the patient's overall state:

I observed him generally, breathing, colour looked quite fine ... observations, blood pressure, pulse, respiration rate, oxygen saturation, drains. Catheter output was below thirty mls for two hours what caused it? That was something that needed attention ... No additional drains, peripheral fluids, he'd had two litres while in theatre which is quite little over five hours. [SURGICAL 2/D/1]	TASK FOCUS MORE AWARE OF CONNECTION BETWEEN PT'S SIGNS

The third example demonstrates a unit of data which was coded in relation to the nurse's apparent focus on signs which inform her understanding of the patient's state. However she also describes an awareness and need to fulfil the monitoring tasks to have confidence in her assessment and practice:

APPENDIX (viiii) continued

On transfer up from theatre the greatest danger is he could change his heart rhythm. He might come up in ventricular tachycardia or, have lots of ectopics or he could be bradycardic ... You know as they are coming on the monitor you can see they are in nice sinus rhythm and their colour is fairly good. You know basically that they're OK. for the initial period. Look at the breathing pattern sometimes it's a little bit worrying when they've been extubated. He was extubated he just had the nasal tube in for suctioning. But he was shifting good air and he had a good colour so that wasn't too bad. [ITU 1/B/3]	GENERAL PATIENT FOCUS BUT AWARE OF NEED TO DO MONITORING TASKS

The fourth example involves a unit of data which was coded in relation to the nurse's focus on assessing the patient's state. The required tasks of monitoring were attended but the nurse's focus remained on what the information gained through these activities offered to his understanding of the person as a whole:

Look at the patient , is he breathing, what's his colour, is he responsive? What's he saying verbally or non verbally? Does he appear comfortable? ... Upstairs [recovery] he had a good colour, he was breathing spontaneously and looked comfortable ... I just need to be told what the main problems were, if there were any major setbacks [during or after theatre]. He's on a Morphine infusion, they worry me slightly as they can cloud the issue ... I knew him pre-operatively so I knew he was a very anxious man with a history of hypertension. He hadn't grossly high blood pressure, a regular pulse, no bleeding from his wounds and a good urine output. He looked pink and perfused with a respiratory rate which was acceptable but I feel it needs watching as he tends to hypoventilate at times ... [SURGICAL 6/B/1]	ASSESSING INDIVIDUAL AS A WHOLE CONNECTING INFORMATION TO GUIDE PRACTICE

LEARNER TO TEACHER IN PRACTICE

The first example involves a unit of data which was coded in relation to the nurse's description of acting as a learner in new situations and utilising every opportunity to gain insight and understanding from watching and copying other nurses:

I learn as I go along and obviously from watching and listening to others, their techniques and what they do in different situations. [ITU 3/I/3]	LEARNER IN THE FIELD

APPENDIX (viiii) continued

The second example involves a unit of data which was coded in relation to the nurse's awareness of how she functioned as a learner from others and her need to be able to teach others effectively:

I need to learn how to teach, I think that is important. I learn from other staff nurses when going to get a patient from theatre and from others about maintaining a high standard of patient care. It's important because the students and people below you are learning from you. [6/C/9]	STILL LEARNER BEGINN-ING TO TEACH

The third example involves a unit of data which was coded in relation to a skilled nurse's description of still learning from very skilled colleagues but also aware of functioning as a teacher to others in the field:

We have some very efficient Sisters on the unit and I do try to copy them because I understand why they are doing things in that way. At the same time I'm aware of those who have had only a basic training and they don't understand why things are being done in a certain way and I try and teach them. [ITU 1/B/8]	MAINLY TEACHER BUT STILL LEARNING FROM EXPERTS

The fourth example is a unit of data which demonstrates a nurse's recognition of her role as a teacher of others working within the field:

I think it is important to be a good role model and part of that is teaching, a good role model passes on her knowledge by teaching. How best to teach a nurse, it depends on that nurse. I try to communicate in different ways and find which style suits the person best. [ITU 1/P/22]	CENTRAL TEACHING ROLE IN PRACTICE

RIGID FOLLOWING OF SET GUIDELINES TO FLEXIBILITY IN ASSESSMENT

The first example involves a unit of data which was coded in relation to the nurses who functioned by following a rigid set of guidelines without fully understanding what signs they were watching for or the significance of them in relation to the patients status:

Set guidelines to care were learnt by parrot fashion. I can remember not knowing why I was doing a lot of things .. Like half hourly obs for two hours and hourly for two hours. [SURGICAL 5/C/6]	FOLLOWS GUIDELINES WITHOUT COMPRE-HENSION

APPENDIX (viiii) continued

The second example involves a unit of data which was coded in relation to the nurse's set routine approach to initial post-operative assessment and care along with some consideration of past, present and future elements impacting on the patient's condition:

Check the breathing, oxygen, saturation level, theatre notes, blood pressure pulse, wound site, any bleeding, any additional drains or tubes placed in during theatre, operation, pain killers if they've had any, anti sickness, if they have been sick. What fluids they're having, had before, and are to follow ... Once I've got all that, I've got all the information I need to contact the doctor. [SURGICAL 2/D/2&3]	FOLLOWS GUIDELINES SOME ASSESS-MENT OF SIGNIFICANCE OF SIGNS TO STATE

The third example involves a unit of data which was coded in relation to the skilled nurse's increasing flexibility in assessment and action which came with the development of knowledge:

Part was education, part was being involved with other people just seeing what they were doing ... part was active on-the-spot learning ... taking all of the various things you see, and read and hear and making your own way out of it. [ITU I/U/29]	USING KNOWLEDGE TO ASSESS & INTERPRET

The fourth example involves a unit of data which was coded in relation to a skilled nurse's flexible approach to assessment which was guided by the priorities needed for that individual. This unit of data follows the choices made by the nurse based on the information and signs revealed during her assessment of the patient:

I assess aspects according to the priorities, if the person is post-anaesthetic and I know they are stable from recovery then the first thing is, are they breathing okay, make sure they are not knocked off and are easily rousable, no respiratory difficulties. Once I'm happy about that I tend to check their blood pressure and pulse and make sure there are no immediate problems. I then assessed the patient's pain, he had a Whipples. I knew that a blood sugar was okay from recovery so left that until later. I could feel that he was fairly warm. That wasn't a concern. Then looked at his peripheral perfusion, general colour and listened to his chest, checked his wound and drainage. I was happy with him. [SURGICAL 2/H/2&3)	FLEXIBLE APPROACH DEPENDS ON INTERPRET-ATION OF PATIENT'S SIGNS

APPENDIX (viiii) continued

DEPENDENCY TO AUTONOMY

The first example involves a unit of data which was coded in relation to a nurse who depended upon the direction of more experienced nursing staff whilst learning the skills required to care for the post-operative patient within their field of practice:

When I started in Intensive Care I worked with people and they showed me what they do and what was best to do for the patient. [ITU 3/I/3]	DEPENDENT ON OTHERS

The second example involves a unit of data which was coded in relation to a nurse's level of autonomy which appeared to be increased as knowledge and confidence was gained through learning from others and through her own efforts:

One nurse had a great knowledge of the patient when they came back from theatre. He explained it in great depth and I could understand what was happening and what I should then be doing. He gave me that knowledge to go ahead and give care confidently. [4/D/4]	GAINING KNOWLEDGE & CONFIDENCE TO MAKE SOME DECISIONS

The third example involves a unit of data which was coded in relation to some nurses lack of desire to function autonomously and expressed happiness to be working with the potential for guidance from others in practice:

I think to be expert you have to have a very dynamic and confident personality. I like the fact that I have my colleagues around so I can always get a second opinion. [ITU 1/B/12]	SEMI-INDEPENDENT BUT WANTS SUPPORT

The fourth example involves a unit of data which was coded in relation to those nurses who had the confidence in their knowledge and ability to make judgements and act on them in patient care:

I know from experience that I'm often right in what I've got to say and it's proven later ... I think my main skill is the ability to interpret all of the information and put it together into a rational opinion. [SURGICAL 6/B/10]	CONFIDENCE TO ACT ON JUDGEMENT

APPENDIX (x)

NURSES' LEVEL AT EACH INDICATOR OF EXPERTISE

TABLE 1	ITU NURSES LEVEL AT EACH INDICATOR OF EXPERTISE															
INDICATOR OF EXPERTISE	NURSES LEVEL AT EACH INDICATOR OF EXPERTISE	1/A	1/B	1/C	1/D	1/E	1/F	1/G	1/H	1/I	1/J	1/K	1/L	1/M	1/N	1/O
DEPENDENT	DEPENDENT							*	*							
TO	LESS DEPENDENT					*						*	*	*		
AUTONOMOUS	GAINING INDEPENDENCE		*												*	
PRACTICE	AUTONOMOUS	*		*	*		*									*
	LEARNER							*	*							
STUDENT AS LEARNER	MAINLY LEARNER					*						*	*	*		
TO	MAINLY TEACHER		*												*	
KNOWLEDGE-ABLE TEACHER	KNOWLEDG-ABLE TEACHER	*		*	*		*									*
RIGIDITY	RIGID							*	*							
TO	LESS RIGID					*						*	*	*		
FLEXIBILITY	MORE FLEXIBLE		*							*					*	
IN ASSESSMENT	TOTALLY FLEXIBLE	*		*	*		*				*					*
TASK	TASK FOCUSED							*	*							
ORIENTATION	LESS TASKS					*						*	*	*		
TO	GROWING PATIENT FOCUS		*							*					*	
HOLISTIC PATIENT CARE	HOLISTIC CARER	*		*	*		*				*					*

APPENDIX (x)

TABLE 2 ITU NURSES LEVEL AT EACH INDICATOR OF EXPERTISE

INDICATORS OF EXPERTISE	NURSES LEVEL AT EACH INDICATOR OF EXPERTISE	1/P	1/Q	1/R	1/S	1/T	1/U	3/A	3/B	3/C	3/D	3/E	3/F	3/G	3/H	3/I	3/J
DEPENDENT	DEPENDENT															*	*
TO	LESS DEPENDENT							*					*				
AUTONOMOUS	GAINING INDEPEND-ENCE		*	*	*		*			*	*	*		*	*		
PRACTICE	AUTONOMOUS	*				*			*								
	LEARNER															*	*
STUDENT AS LEARNER	MAINLY LEARNER							*					*				
TO KNOWLEDGE-ABLE	MAINLY TEACHER		*	*	*		*			*	*	*		*	*		
TEACHER	KNOWLEDG-ABLE TEACHER	*				*			*								
RIGIDITY	RIGID															*	*
TO	LESS RIGID							*					*				
FLEXIBILITY	MORE FLEXIBLE		*	*	*		*			*	*	*		*	*		
IN ASSESSMENT	TOTALLY FLEXIBLE	*				*			*								
TASK	TASK ORIENTATED															*	*
ORIENTATION	LESS TASKS							*					*				
TO	GROWING PATIENT FOCUS		*	*	*		*			*	*	*		*	*		
HOLISTIC PATIENT CARE	HOLISTIC CARER	*				*			*								

APPENDIX (x)

TABLE 3 SURGICAL WARD NURSES LEVEL AT EACH INDICATOR OF EXPERTISE

INDICATORS OF EXPERTISE	NURSES LEVEL AT EACH INDICATOR OF EXPERTISE	2/A	2/B	2/C	2/D	2/E	2/F	2/G	2/H	2/I	2/J	2/K	4/A	4/B	4/C	4/D
DEPENDENT	DEPENDENT		*					*				*		*		
TO	LESS DEPENDENT				*		*			*	*		*		*	*
AUTONOMOUS	GAINING INDEPENDENCE	*		*		*										
PRACTICE	AUTONOMOUS								*							
	LEARNER		*					*				*		*		
STUDENT AS LEARNER	MAINLY LEARNER				*		*			*	*		*		*	*
TO	MAINLY TEACHER	*		*		*										
KNOWLEDGE-ABLE	KNOWLEDG-ABLE								*							
TEACHER	TEACHER															
RIGIDITY	RIGID		*					*				*		*		
TO	LESS RIGID				*		*			*	*		*		*	*
FLEXIBILITY	MORE FLEXIBLE	*		*		*										
IN ASSESSMENT	TOTALLY FLEXIBLE								*							
TASK	TASK FOCUSED		*					*				*		*		
ORIENTATION	LESS TASKS				*		*			*	*		*		*	*
TO	GROWING PATIENT FOCUS	*		*		*										
HOLISTIC PATIENT CARE	HOLISTIC CARER								*							

APPENDIX (x)

TABLE 4 SURGICAL WARD NURSES LEVEL AT EACH INDICATOR OF EXPERTISE

INDICATORS OF EXPERTISE	NURSES LEVELS AT EACH INDICATOR OF EXPERTISE	4/E	4/F	4/G	5/A	5/B	5/C	5/D	5/E	5/F	5/G	5/H	5/I	6/A	6/B	6/C
DEPENDENT	DEPENDENT		*						*					*		
TO	LESS DEPENDENT				*			*				*	*			*
AUTONOMOUS	GAINING INDEPENDENCE	*		*		*				*	*					
PRACTICE	AUTONOMOUS						*								*	
STUDENT AS LEARNER	LEARNER		*						*					*		
TO	MAINLY LEARNER				*			*				*	*			*
KNOWLEDGE-ABLE	MAINLY TEACHER	*		*		*				*	*					
TEACHER	KNOWLEDGE-ABLE TEACHER						*								*	
RIGIDITY	RIGID		*						*					*		
TO	LESS RIGID				*			*				*	*			*
FLEXIBILITY	MORE FLEXIBLE	*		*		*				*	*					
IN ASSESSMENT	TOTALLY FLEXIBLE						*								*	
TASK	TASK FOCUSED		*						*							
ORIENTATION	LESS TASKS				*			*				*	*			*
TO	GROWING PATIENT FOCUS	*		*		*				*	*					
HOLISTIC PATIENT CARE	HOLISTIC CARER						*								*	

APPENDIX (xi)

IDENTIFICATION BY DATA OF NURSES' LEVELS OF EXPERTISE

TABLE 1

IDENTIFICATION BY DATA OF ITU NURSES LEVELS OF EXPERTISE

CODE OF NURSE	LEVEL OF EXPERTISE
1/A	EXPERT
1/B	PROFICIENT
1/C	EXPERT
1/D	EXPERT
1/E	COMPETENT
1/F	EXPERT
1/G	ADVANCED BEGINNER
1/H	ADVANCED BEGINNER
1/I	PROFICIENT
1/J	EXPERT
1/K	COMPETENT
1/L	COMPETENT
1/M	COMPETENT
1/N	PROFICIENT
1/O	EXPERT
1/P	EXPERT
1/Q	PROFICIENT
1/R	PROFICIENT
1/S	PROFICIENT
1/T	EXPERT
1/U	PROFICIENT
3/A	COMPETENT
3/B	EXPERT
3/C	PROFICIENT
3/D	PROFICIENT
3/E	PROFICIENT
3/F	COMPETENT
3/G	PROFICIENT
3/H	PROFICIENT
3/I	ADVANCED BEGINNER
3/J	ADVANCED BEGINNER

APPENDIX (xi) continued

TABLE 2 IDENTIFICATION BY DATA OF SURGICAL NURSES LEVELS OF EXPERTISE	
CODE OF NURSE	**LEVEL OF EXPERTISE**
2/A	PROFICIENT
2/B	ADVANCED BEGINNER
2/C	PROFICIENT
2/D	COMPETENT
2/E	PROFICIENT
2/F	COMPETENT
2/G	NOVICE
2/H	EXPERT
2/I	COMPETENT
2/J	COMPETENT
2/K	NOVICE
4/A	COMPETENT
4/B	ADVANCED BEGINNER
4/C	COMPETENT
4/D	COMPETENT
4/E	PROFICIENT
4/F	ADVANCED BEGINNER
4/G	PROFICIENT
5/A	COMPETENT
5/B	PROFICIENT
5/C	EXPERT
5/D	COMPETENT
5/E	ADVANCED BEGINNER
5/F	PROFICIENT
5/G	PROFICIENT
5/H	COMPETENT
5/I	COMPETENT
6/A	ADVANCED BEGINNER
6/B	EXPERT
6/C	COMPETENT

APPENDIX (xii)

PROFESSIONAL JUDGEMENT OF NURSES' LEVELS OF CLINICAL EXPERTISE

TABLE 1
PROFESSIONAL JUDGEMENT OF ITU NURSES LEVELS OF CLINICAL EXPERTISE

CODE OF NURSE	NURSE'S JUDGEMENT	WARD SISTER'S JUDGEMENT	RESEARCHER'S JUDGEMENT
1/A	EXPERT	PROFICIENT	EXPERT
1/B	PROFICIENT	PROFICIENT	PROFICIENT
1/C	EXPERT	EXPERT	EXPERT
1/D	COMPETENT	EXPERT	EXPERT
1/E	COMPETENT	COMPETENT	COMPETENT
1/F	EXPERT	PROFICIENT	EXPERT
1/G	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
1/H	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
1/I	COMPETENT	PROFICIENT	PROFICIENT
1/J	EXPERT	EXPERT	EXPERT
1/K	COMPETENT	COMPETENT	COMPETENT
1/L	COMPETENT	COMPETENT	COMPETENT
1/M	COMPETENT	ADVANCED BEGINNER	COMPETENT
1/N	COMPETENT/ PROFICIENT	PROFICIENT	P ROFICIENT
1/O	PROFICIENT/ EXPERT	EXPERT	EXPERT
1/P	EXPERT	EXPERT	EXPERT
1/Q	PROFICIENT	PROFICIENT	PROFICIENT
1/R	COMPETENT	PROFICIENT	PROFICIENT
1/S	COMPETENT	PROFICIENT	PROFICIENT
1/T	EXPERT	EXPERT	EXPERT
1/U	PROFICIENT	PROFICIENT	PROFICIENT
3/A	COMPETENT	ADVANCED BEGINNER	COMPETENT
3/B	EXPERT	EXPERT	EXPERT
3/C	PROFICIENT/ EXPERT	EXPERT	PROFICIENT
3/D	PROFICIENT	PROFICIENT	PROFICIENT
3/E	PROFICIENT	PROFICIENT	PROFICIENT
3/F	COMPETENT/ PROFICIENT	PROFICIENT	COMPETENT
3/G	PROFICIENT	PROFICIENT	PROFICIENT
3/H	PROFICIENT	PROFICIENT	PROFICIENT
3/I	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
3/J	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER

APPENDIX (xii) continued

TABLE 2 PROFESSIONAL JUDGEMENT OF SURGICAL WARD NURSES LEVEL OF CLINICAL EXPERTISE			
CODE OF NURSE	**NURSE'S JUDGEMENT**	**WARD SISTER'S JUDGEMENT**	**RESEARCHER'S JUDGEMENT**
2/A	PROFICIENT	EXPERT	PROFICIENT
2/B	COMPETENT	NOVICE	ADVANCED BEGINNER
2/C	COMPETENT/ PROFICIENT	PROFICIENT	PROFICIENT
2/D	COMPETENT	COMPETENT	COMPETENT
2/E	PROFICIENT	PROFICIENT	PROFICIENT
2/F	COMPETENT	COMPETENT	COMPETENT
2/G	ADVANCED BEGINNER	ADVANCED BEGINNER	NOVICE
2/H	EXPERT	EXPERT	EXPERT
2/I	COMPETENT	COMPETENT	COMPETENT
2/J	COMPETENT/ PROFICIENT	COMPETENT/ PROFICIENT	COMPETENT
2/K	ADVANCED BEGINNER	ADVANCED BEGINNER	NOVICE
4/A	COMPETENT	COMPETENT	COMPETENT
4/B	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
4/C	COMPETENT	COMPETENT	COMPETENT
4/D	COMPETENT	COMPETENT	COMPETENT
4/E	PROFICIENT	COMPETENT	PROFICIENT
4/F	COMPETENT	ADVANCED BEGINNER	ADVANCED BEGINNER
4/G	PROFICIENT	COMPETENT	PROFICIENT
5/A	COMPETENT	PROFICIENT	COMPETENT
5/B	PROFICIENT	PROFICIENT	PROFICIENT
5/C	EXPERT	EXPERT	EXPERT
5/D	COMPETENT	COMPETENT	COMPETENT
5/E	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
5/F	PROFICIENT	PROFICIENT	PROFICIENT
5/G	PROFICIENT	PROFICIENT	PROFICIENT
5/H	COMPETENT/ PROFICIENT	PROFICIENT	COMPETENT
5/I	ADVANCED BEGINNER	COMPETENT	COMPETENT
6/A	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
6/B	EXPERT	EXPERT	EXPERT
6/C	COMPETENT	PROFICIENT	COMPETENT

APPENDIX (xiii)

NURSES' LEVELS OF EXPERTISE IDENTIFIED BY THE NURSE TRIAD'S JUDGEMENT AND THE DATA

TABLE 1
ITU NURSES LEVELS OF EXPERTISE
IDENTIFIED BY THE NURSE TRIADS JUDGEMENT AND THE DATA

CODE OF NURSE	NURSES JUDGEMENT	WARD SISTER'S JUDGEMENT	RESEARCHER'S JUDGEMENT	IDENTIFICATION BY DATA
1/A	EXPERT	PROFICIENT	EXPERT	EXPERT
1/B	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
1/C	EXPERT	EXPERT	EXPERT	EXPERT
1/D	COMPETENT	EXPERT	EXPERT	EXPERT
1/E	COMPETENT	COMPETENT	COMPETENT	COMPETENT
1/F	EXPERT	PROFICIENT	EXPERT	EXPERT
1/G	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
1/H	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
1/I	COMPETENT	PROFICIENT	PROFICIENT	PROFICIENT
1/J	EXPERT	EXPERT	EXPERT	EXPERT
1/K	COMPETENT	COMPETENT	COMPETENT	COMPETENT
1/L	COMPETENT	COMPETENT	COMPETENT	COMPETENT
1/M	COMPETENT	ADVANCED BEGINNER	COMPETENT	COMPETENT
1/N	COMPETENT/ PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
1/O	PROFICIENT/ EXPERT	EXPERT	EXPERT	EXPERT
1/P	EXPERT	EXPERT	EXPERT	EXPERT
1/Q	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
1/R	COMPETENT	PROFICIENT	PROFICIENT	PROFICIENT
1/S	COMPETENT	PROFICIENT	PROFICIENT	PROFICIENT
1/T	EXPERT	EXPERT	EXPERT	EXPERT
1/U	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
3/A	COMPETENT	ADVANCED BEGINNER	COMPETENT	COMPETENT
3/B	EXPERT	EXPERT	EXPERT	EXPERT
3/C	PROFICIENT/ EXPERT	EXPERT	PROFICIENT	PROFICIENT
3/D	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
3/F	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
3/F	COMPETENT/ PROFICIENT	PROFICIENT	COMPETENT	COMPETENT
3/G	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
3/H	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
3/I	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
3/J	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER

APPENDIX (xiii) continued

TABLE 2
SURGICAL WARD NURSES LEVELS OF EXPERTISE IDENTIFIED BY THE NURSE TRIADS JUDGEMENT AND DATA

CODE OF NURSE	NURSES JUDGEMENT	WARD SISTERS JUDGEMENT	RESEARCHER'S JUDGEMENT	IDENTIFICATION BY DATA
2/A	PROFICIENT	EXPERT	PROFICIENT	PROFICIENT
2/B	COMPETENT	NOVICE	ADVANCED BEGINNER	ADVANCED BEGINNER
2/C	COMPETENT/ PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
2/D	COMPETENT	COMPETENT	COMPETENT	COMPETENT
2/E	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
2/F	COMPETENT	COMPETENT	COMPETENT	COMPETENT
2/G	ADVANCED BEGINNER	ADVANCED BEGINNER	NOVICE	ADVANCED BEGINNER
2/H	EXPERT	EXPERT	EXPERT	EXPERT
2/I	COMPETENT	COMPETENT	COMPETENT	COMPETENT
2/J	COMPETENT/ PROFICIENT	COMPETENT/ PROFICIENT	COMPETENT	COMPETENT
2/K	ADVANCED BEGINNER	ADVANCED BEGINNER	NOVICE	ADVANCED BEGINNER
4/A	ADVANCED BEGINNER	COMPETENT	COMPETENT	COMPETENT
4/B	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
4/C	COMPETENT	COMPETENT	COMPETENT	COMPETENT
4/D	COMPETENT	COMPETENT	COMPETENT	COMPETENT
4/E	PROFICIENT	COMPETENT	PROFICIENT	PROFICIENT
4/F	COMPETENT	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
4/G	PROFICIENT	COMPETENT	PROFICIENT	PROFICIENT
5/A	COMPETENT	PROFICIENT	COMPETENT	COMPETENT
5/B	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
5/C	EXPERT	EXPERT	EXPERT	EXPERT
5/D	COMPETENT	COMPETENT	COMPETENT	COMPETENT
5/E	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
5/F	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
5/G	PROFICIENT	PROFICIENT	PROFICIENT	PROFICIENT
5/H	COMPETENT/ PROFICIENT	PROFICIENT	COMPETENT	COMPETENT
5/I	ADVANCED BEGINNER	COMPETENT	COMPETENT	COMPETENT
6/A	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER	ADVANCED BEGINNER
6/B	EXPERT	EXPERT	EXPERT	EXPERT
6/C	COMPETENT	PROFICIENT	COMPETENT	COMPETENT

APPENDIX (xiv) POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF NURSES IDENTIFIED BY THE DATA

TABLE 1
POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF THE ADVANCED BEGINNER NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	TOTAL YEARS SINCE RGN REGISTRATION	YEARS IN FIELD OF PRACTICE	BREAKS FROM ACUTE CARE PRACTICE	YEARS IN OTHER AREAS	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
1	**1 year**	1 year	0	0	0	0
2	**6 months**	6 months	0	0	0	0
3	**10 months**	10 months	0	0	Open Univers-ity Module in progress	0
4	**1 month**	1 month	0	0	0	0
5	**2 months**	2 months	0	0	0	0
6	**6 months**	2 months	0	4 months	0	BA Post Grad Diploma (incomplete)
7	**9 months**	9 months	0	0	0	0
8	**4 years**	1 year (P/T)	0	3 years	0	0
9	**5 years**	1 year	4 years	0	0	0
10	**2 years and 3 months**	9 months	0	1 year and 6 month	0	0
11	**2 years and 3 months**	1 year and 7 months	0	8 months	0	0

APPENDIX (xiv) continued

TABLE 2

POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF THE COMPETENT NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	TOTAL YEARS SINCE RGN REGISTRATION	YEARS IN FIELD OF PRACTICE	BREAKS FROM ACUTE CARE PRACTICE	YEARS IN OTHER AREAS	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
12	**9 months**	9 months	0	0	0	0
13	**1 year and 6 months**	1 year and 6 months	0	0	0	BSc
14	**1 year**	1 year	0	0	0	0
15	**5 years**	2 years	1 year	2 years	Teaching and assessing in progress	0
16	**3 years**	1 year	0	2 years	0	Diploma in Nursing BA (incomplete)
17	**1 year and 2 months**	2 months	0	1 year	0	0
18	**1 year**	3 months	0	9 months (ITU)	0	0
19	**4 years**	3 years and 9 months	3 months	0	HIV Family Planning	0
20	**11 years (SEN) 1 (RGN)**	8 years (SEN) 1 (RGN)	2 years	1 year	Open University module	0

APPENDIX (xiv) continued

TABLE 3

POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF THE COMPETENT NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	TOTAL YEARS SINCE RGN REGISTRATION	YEARS IN FIELD OF PRACTICE	BREAKS FROM ACUTE CARE PRACTICE	YEARS IN OTHER AREAS	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
21	**4 years and 6 months**	4 years and 6 months	0	0	Gynae Conselling	0
22	**3 years**	2 years	0	1 year	Army Medic Gynae in progress	0
23	**1 year and 6 months**	1 year and 6 months	0	0	Nursery Counselling	0
24	**3 years and 3 months**	2 years	3 months	1 year	ITU (incomplete)	0
25	**20 years and 6 months**	17 years	3 years	6 months	RM ITU	0
26	**13 years**	5 (F/T) 4 (P/T)	1 year	3 years	0	Diploma X 2 BA in progress
27	**8 years**	5 years	6 months	2 years and 6 months	ITU	0
28	**3 years**	2 years	0	1 year	0	0
29	**3 years and 6 months**	2 years and 6 months	0	1 year	ITU	BSc (incomplete)

APPENDIX (xiv) continued

TABLE 4

POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF THE PROFICIENT NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	TOTAL YEARS SINCE RGN REGISTRATION	YEARS IN FIELD OF PRACTICE	BREAKS FROM ACUTE CARE PRACTICE	YEARS IN OTHER AREAS	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
30	11 years	3 years	2 years	6 years	RM Teaching	0
31	7 years	3 years	0	4 year	Open University module	Diploma in Nursing in progress
32	7 years	2 years	0	5 years	Burns/Plastics Diabetes	BSc in progress
33	5 years	9 months	0	4 years +	Open University module	Counselling Certificate
34	13 years	1 year	1 year	6 years (ITU) 5 years	ITU Research Teaching Counselling Nurse Tutor	BSc Graduate Diploma
35	15 years	4 years and 6 months	0	6 months (ITU) 10	Elderly Teaching RM	Management Certificate
36	9 years (SEN) 3 years (RGN)	3 years	0	6 years (SEN) 3 years	Gynae Family Plan	0
37	6 years	5 years	0	1 year	Gynae Orthopaedic	0
38	14 years	11 years	0	3 years	ITU	0
39	19 years	5 years (F/T) 11 years (P/T)	2 years	1 year	ITU	0

APPENDIX (xiv) continued

TABLE 5

POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF THE PROFICIENT NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	TOTAL YEARS SINCE RGN REGISTRATION	YEARS IN FIELD OF PRACTICE	BREAKS FROM ACUTE CARE PRACTICE	YEARS IN OTHER AREAS	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
40	**10 years**	10 years	0	0	Cardiac Teaching	BSc in progress
41	**7 years**	6 years (F/T) 1 year (P/T)	0	0	Cardiac	Education Certificate BSc in progress
42	**17 years**	8 years (F/T) 3 years (P/T)	1 year	5 years	0	BA
43	**10 years**	8 years	0	2 years	Cardiac Neonatal ITU	0
44	**17 years**	7 years	8 years	2 years	RMN RM	Diploma in Nursing
45	**4 years**	3 years +	0	9 months	ITU Coronary Care	BA
46	**7 years**	2 years (F/T) 1 year (P/T)	0	4 years	ITU Teaching	Management Certificate BA in progress
47	**4 years**	3 years	0	1 year	ITU	Adult Education Certificate
48	**5 years**	2 years +	1 year +	1 year +	ITU Professional Studies	0
49	**5 years**	3 years	1 year +	1 year +	ITU Teaching	0

TABLE 6

POST-BASIC EDUCATION AND CLINICAL EXPERIENCE OF THE EXPERT NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	TOTAL YEARS SINCE RGN REGISTRATION	YEARS IN FIELD OF PRACTICE	BREAKS FROM ACUTE CARE PRACTICE	YEARS IN OTHER AREAS	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
50	12 years	2 years	2 years	7 years (ITU) 1 year	ITU Research Teaching	BSc in progress
51	6 years	5 years	1 year	0	2 X Gynae Teaching	Counselling Cert.
52	12 years	5 years	2 years	5 years (ITU)	ITU RMN	Management Cert.
53	5 years	5 years	0	o	ITU	BSc MSc in progress
54	12 years	10 years	0	2 years	ITU Teaching	Dip Nursing (incomplete)
55	14 years (SEN) 2 years (RGN)	7 years (SEN) 2 years (RGN)	3 years	4 years (SEN)	(SEN) ITU	Management Cert.
56	18 years	12 years	2 years	4 years	ITU ENB 738 RMN	Adult Education Cert.
57	12 years	11 years	0	1 year	0	0
58	11 years	8 years	0	3 years	ITU	BN (incomplete) BA in progress
59	14 years	12 years	1 year	1 year	ITU Teaching	Management Cert. RM
60	19 years	13 years	5 years	1 year	ITU RMN	Management Cert. BA
61	6 years	5 years	1 year	0	ITU	Adult education Cert.

APPENDIX (xv)

NURSES' YEARS OF CLINICAL EXPERIENCE

TABLE 1

ITU NURSES YEARS OF CLINICAL EXPERIENCE ACROSS LEVELS OF EXPERTISE

LEVEL OF EXPERTISE	YEARS SINCE REGISTRATION	YEARS IN SPECIFIC FIELD OF PRACTICE
ADVANCED BEGINNER	2 - 5 years	9 months - 18 months
COMPETENT	3 - 21 years	2 - 18 years
PROFICIENT	4 - 20 years	2 - 16 years
EXPERT	5 - 19 years (1 with 2 years post RGN conversion)	5 - 13 years (1 with 2 years post RGN conversion)

TABLE 2

SURGICAL WARD NURSES YEARS OF CLINICAL EXPERIENCE ACROSS LEVELS OF EXPERTISE

LEVEL OF EXPERTISE	YEARS SINCE REGISTRATION	YEARS IN SPECIFIC FIELD OF PRACTICE
ADVANCED BEGINNER	1 month - 1 year	1 month - 1 year
COMPETENT	9 months - 5 years (1 X 1 year post RGN and 12 years as SEN)	2 months - 4 years (1 X 1 year post RGN and 9 years as SEN)
PROFICIENT	4 - 15 years	1 - 8 years
EXPERT	6 - 13 years	2 - 6 years

APPENDIX (xvi)

NURSES' YEARS IN PRACTICE ACROSS FOUR LEVELS OF EXPERTISE

TABLE 1

THE ADVANCED BEGINNER NURSES YEARS IN PRACTICE

AREA OF PRACTICE	YEARS SINCE RGN REGISTRATION	YEARS IN SPECIFIC FIELD OF PRACTICE
ITU	2 - 5 years mean = 3 years & 4.5 months median = 3 years &1.5 months	9 months - 18 months mean = 13 months median = 12 months
SURGICAL WARD	1 month - 1 year mean = 6. 6 months median = 6 months	1 month - 1 year mean = 6 months median = 6 months
RANGE OF YEARS IN PRACTICE OF NURSES	**1 month - 5 years** **mean = 18.9 months** **median = 9 months**	**1 month to 18 months** **mean = 10 months** **median = 9 months**

TABLE 2

THE COMPETENT NURSES YEARS IN PRACTICE

AREA OF PRACTICE	YEARS SINCE RGN REGISTRATION	YEARS IN SPECIFIC FIELD OF PRACTICE
ITU	3 - 21 years mean = 8 years & 5.4 months median = 5 years & 9 months	2 - 17 years mean = 6 years & 3 months median = 3 years & 9 months
SURGICAL WARD	9 months - 4 years & 6 months (1 X 1 year post EN\RGN conversion) mean = 2 years & 3.4 months median = 18 months	2 months - 4 years & 6 months (1 X 1 year post EN\RGN conversion) mean = 1 year & 4.2 months median = 1 year & 3 months
RANGE OF YEARS IN PRACTICE OF NURSES	**9 months - 21 years** **mean = 4 years & 4 months** **median = 3 years**	**2 months - 18 years** **mean = 3 years & 2 months** **median = 2 years**

APPENDIX (xvi) continued

TABLE 3 THE PROFICIENT NURSES YEARS IN PRACTICE		
AREA OF PRACTICE	**YEARS SINCE RGN REGISTRATION**	**YEARS IN SPECIFIC FIELD OF PRACTICE**
ITU	4 - 17 mean = 9 years & 9 months median = 8 years & 6 months	2 - 16 mean = 7 years median = 7 years
SURGICAL	3 - 15 mean = 8 years & 4 months median = 7 years	1 - 5 mean = 2 years & 9 months median = 3 years
RANGE OF YEARS IN PRACTICE OF NURSES	**4 - 20 years mean = 10 years & 3 months median = 7 years**	**1 - 16 years mean = 5 years & 4 months median = 3 years**

TABLE 4 THE EXPERT NURSES YEARS IN PRACTICE		
AREA OF PRACTICE	**YEARS SINCE RGN REGISTRATION**	**YEARS IN SPECIFIC FIELD OF PRACTICE**
ITU	2 - 19 (1 with 2 years post EN/RGN conversion) mean = 11 years median = 12 years	5 - 13 (1 with 2 years post RGN conversion) mean = 8 years & 6 months median = 10 years
SURGICAL	6 - 13 mean = 10 years median = 12 years	2 - 6 mean = 4 years median = 5 years
RANGE OF YEARS IN PRACTICE OF NURSES	**5 - 19 years mean = 10 years & 9 months median = 12 years**	**2 - 13 years mean = 7 years & 6 months median = 6 years & 6 months**

APPENDIX (xvii)

POST-BASIC EDUCATION OF THE NURSES IDENTIFIED BY THE DATA

TABLE 1

POST-BASIC EDUCATION OF THE ADVANCED BEGINNER ITU NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
1/G	0	0
1/H	0	0
3/I	0	0
3/J	0	0

TABLE 2

POST-BASIC EDUCATION OF THE COMPETENT ITU NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
1/E	ITU (incomplete)	0
1/K	RM ITU	0
1/L	0	Diplomas (2) BA in progress
1/M	ITU	0
3/A	0	0
3/F	ITU	BSc (incomplete)

APPENDIX (xvii) continued

TABLE 3 POST-BASIC EDUCATION OF THE PROFICIENT ITU NURSES IDENTIFIED BY THE DATA		
CODE OF NURSE	**POST BASIC COURSES**	**ACADEMIC QUALIFICATIONS**
1/B	ITU	0
1/I	ITU	0
1/N	Cardiac Teaching and assessing	BSc in progress
1/Q	Cardiac	Education Certificate BSc in progress
1/R	0	BA
1/S	Cardiac Neonatal ITU	0
1/U	RMN RM	Diploma in Nursing
3/C	ITU Cardiac	BA
3/D	ITU;Teaching and assessing	Management Certificate BA in progress
3/E	ITU	Adult Education Certificate
3/G	ITU	0
3/H	ITU; Teaching and assessing	0

TABLE 4 POST-BASIC EDUCATION OF THE EXPERT ITU NURSES IDENTIFIED BY THE DATA		
CODE OF NURSE	**POST BASIC COURSES**	**ACADEMIC QUALIFICATIONS**
1/A	ITU	BSc MSc in progress
1/C	ITU Teaching	Diploma of Nursing (incomplete)
1/D	(SEN) ITU	Management Certificate
1/F	ITU ENB 738 RMN	Adult Education Certificate
1/J	0	0
1/O	ITU	BN (incomplete) BA in progress
1/P	RM ITU Teaching	Management Certificate
1/T	ITU RMN	Diploma of Teaching Management Certificate BA
3/B	ITU	Adult Education Certificate

APPENDIX (xvii) continued

TABLE 5

POST-BASIC EDUCATION OF THE ADVANCED BEGINNER SURGICALWARD NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
2/B	0	0
2/G	0	0
2/K	0	Certificate Module in progress
4/B	0	0
4/F	0	0
5/E	0	BA Post Grad Diploma (incomplete)
6/A	0	0

TABLE 6

POST-BASIC EDUCATION OF THE COMPETENT SURGICAL WARD NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
2/D	0	0
2/F	0	BSc
2/I	0	0
2/J	Teaching and assess-ing (in progress)	0
4/A	0	Diploma in Nursing BA (incomplete)
4/C	0	0
4/D	0	0
5/A	HIV Family Planning	0
5/D	0	Certificate module
5/H	Gynae Counselling	0
5/I	Gynae in progress	0
6/C	Counselling	0

APPENDIX (xvii) continued

TABLE 7

POST -BASIC EDUCATION OF THE PROFICIENT SURGICAL WARD NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
2/A	RM; Teaching and assessing	0
2/C	0	Certificate module; Diploma in Nursing in progress
2/E	Burns/Plastics Diabetes	BSc in progress
4/E	0	Certificate module; Counselling Certificate
4/G	ITU; Research; Teaching & assessing; Counselling Nurse Tutor	BSc Graduate Diploma
5/B	Elderly; Teaching & assessing; RM	Management Certificate
5/F	Gynae Family Plan	0
5/G	Gynae Pre-reg. Orthopaedic	0

TABLE 8

POST-BASIC EDUCATION OF THE EXPERT SURGICAL WARD NURSES IDENTIFIED BY THE DATA

CODE OF NURSE	POST BASIC COURSES	ACADEMIC QUALIFICATIONS
2/H	ITU Research Teaching and assessing	BSc in progress
5/C	Family Planning 2 X Gynae Teaching and assessing	Counselling Certificate
6/B	ITU RMN	Management Certificate

APPENDIX (xviii)

POST-BASIC EDUCATION OF NURSES ACROSS FOUR LEVELS OF EXPERTISE

TABLE 1 POST-BASIC EDUCATION OF THE NURSES AT THE ADVANCED BEGINNER LEVEL OF EXPERTISE		
WARDS	POST BASIC COURSES	ACADEMIC QUALIFICATION
ITU	4/4 No courses completed or in progress	4/4 No courses completed or in progress
SURGICAL	7/7 No courses completed or in progress	1/7 certificate in progress 1/7 B/A 1/7 Grad Diploma in progress 5/7 No courses completed or in progress

TABLE 2 POST-BASIC EDUCATION OF THE NURSES AT THE COMPETENT LEVEL OF EXPERTISE		
WARDS	POST BASIC COURSES	ACADEMIC QUALIFICATION
ITU	4/6 ITU (1partial) 1/6 RM 2/6 No course completed or in progress	1/6 Diploma (2) 2/6 BA/BSc in progress 4/6 No courses completed or in progress
SURGICAL	3/12 post basic courses pertaing to field 1/12 post basic courses in progress 1/12 Teaching and assessing in progress 7/12 No courses in progress	1/12 Management or education certificate 1/12 Diploma in Nursing 1/12 BA/BSc 1/12 BA/BSc in progress 9/12 No courses completed or in progress

TABLE 3 POST-BASIC EDUCATION OF THE NURSES AT THE PROFICIENT LEVEL OF EXPERTISE		
WARDS	POST BASIC COURSES	ACADEMIC QUALIFICATION
ITU	10/12 ITU courses (general or specialised) 3/12 Teaching and assessing 1/12 RM/RMN 2/12 No courses completed or in progress	3/12 Management or education cert. 1/12 Diploma in Nursing 2/12 BA/BSc 3/12 BA/BSc in progress 3/12 No courses completed or in progress
SURGICAL	5/8 post basic courses pertaining to specialty 2/8 Teaching and assessing 2/8 RM/RMN 3/8 Nocourse completed or in progress	3/8 Management or education cert. 1/8 Diploma in Nursing 1/8 BA/BSc 1/8 BA/BSc in progress 3/8 None completed or in progress

TABLE 4 POST-BASIC EDUCATION OF THE NURSES AT THE EXPERT LEVEL OF EXPERTISE		
WARDS	POST BASIC COURSES	ACADEMIC QUALIFICATION
ITU	8/9 ITU (general or specialised) 2/9 Teaching and Assessing 1/9 RM and RMN	5/9 Management or education cert. 1/9 Diploma in Nursing 1/9 Diploma in Nursing in progress 2/9 BA/BSc 2/9 BN/BA/BSc in progress 1/9 None completed or in progress
SURGICAL	3/3 post basic course informing speciality 2/3 Teaching and Assessing 1/3 RM or RMN	2/3 Management or education certificate 1/3 BN/BA/BSc in progress

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